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The Infant Before, During, and After Birth*

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OUR present knowledge of the principles of child hygiene and the varied experience gained through their practical application to local communities during a quarter of a century, place us in a position to evaluate present trends and consider future developments. It is comparatively simple to outline a broad program for child hygiene. It is, however, quite another matter to fit such a program to the diverse needs of various types of localities, to secure adequate funds for financing measures deemed necessary, and to conduct a local organization over a sufficient period to demonstrate that our program is sound and effective.

The development of a consistent and progressive child health program over a long series of years has been carried out in so few places that it is difficult to assess with any assurance the relative values of different methods employed. Most of our efforts in this field have been either spasmodically intensive or conservatively prolonged. Progress has been made, of course, by the application of certain fundamental principles, notably in the field of infant hygiene, though much still remains to be done in the maternal, neonatal, and preschool areas.

We have been led to believe, through high powered publicity, that great strides have been made in our child hygiene work. This is undoubtedly true when applied to the care of the baby. In our prenatal program, however, and in the prevention of maternal and neonatal mortality, we have scarcely made an impression. Much progress has

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been made in scientific principles of infant feeding, prevention of nutritional diseases, protection of milk supplies, and technic of public health nursing. We begin to see the results of our antidiphtheria campaigns, and the protection of children against tuberculosis, but very little progress has been made in the control of whooping cough, measles, and the respiratory diseases.

The child health demonstrations which have been completed in centers throughout the country have brought us valuable data and indicate practical methods applicable to individual communities. It is essential now to show that similar methods can be applied with equal success to other places at costs which the communities can afford.

The United States as a whole reached its highest interest in maternal and infant hygiene during the years when the Sheppard-Towner Act was in force. Then it was possible to institute measures for the protection of mothers and babies in every state. A great impetus was given to child hygiene in the rural districts and small towns. Public health nursing was extended considerably. Since the expiration of the Sheppard-Towner Act it has been impossible to continue the work as extensively in a number of the states, especially in the South and West. The organization for child hygiene in some states has almost completely broken down. Much of the ground gained during the 7 years of Sheppard-Towner activity will be lost if means are not found soon to continue.

In other places, where child hygiene had been organized prior to the Sheppard-Towner Act, there is a tendency to consolidate the work and spread the general health program over the whole child hygiene field. While a great deal of interest is being expressed now as to the outcome of the White House Conference, there is no question that the child hygiene work in many communities has been retarded by withdrawal of state and federal assistance. A period of reaction has commenced which may seriously affect our whole child welfare program.

An interesting phenomenon in regard to infant mortality manifests itself in times of depression—the rates continue to fall during the period of unemployment and economic depression. This may be due to a number of factors. The impetus given infant hygiene by the prosperous years may continue. Widespread popular education in child hygiene is conducted despite the depression. Another factor, seldom stressed in connection with times of depression, is that mothers are forced to remain at home with their babies and breast feeding is encouraged. The lot of the older children, however, is not so favorable, as it becomes more difficult to feed them properly and to afford adequate medical supervision.

Our objectives in the community child hygiene program appear to be changing gradually. From a program designed primarily to prevent infant mortality, we are developing interest in the survivors. The prevention of both morbidity and mortality in older children, as well as infants, demands our best efforts. Our interest has broadened to include the whole child and all age groups.

It is, therefore, quite appropriate to consider in this paper the conditions which affect the whole child before, during, and after birth. Child hygiene, while theoretically beginning with conception, has its background in the health of father and mother and the stocks from which they have sprung. We must always reckon with hereditary factors in any inclusive program for child welfare. At conception heredity is sealed. From then on environment will modify or mold the individual along patterns which heredity has laid down. It is futile to argue which has the more influence, heredity or environment. Both are integral parts of the whole individual and act and react, one upon the other.

From conception to birth the fetus is completely environed by its mother. For all practical purposes it is a parasite, supported and protected by her. It receives nourishment, oxygen, and heat through her and is dependent upon her for the removal of its wastes. No direct nervous connection between mother and fetus has ever been demonstrated. It is quite evident, therefore, that anything we do for the child before birth must be accomplished either through heredity before conception, by means of race hygiene, or through the medium of the mother, from conception until birth. While we do not possess all of the scientific knowledge necessary to afford complete protection to the developing embryo and fetus, we do have enough to prevent many of the disasters which still occur. The earlier the prospective mother is brought under skilled medical and nursing supervision, the more opportunity we have to afford adequate protection.

Any complete community program for the hygiene of the child must begin with pre-parental and parental instruction, especially of the mother. It might well begin by providing instruction for prospective mothers, including hygiene of pregnancy and infancy. To be most effective this education should begin in the junior and senior high schools as a part of the home economics courses. Where this instruction is combined with practical demonstration in a child welfare center or nursery school, it will net the greatest returns. One of the most important functions of the public health nurse is to provide the mother with direct and practical instruction, through the health center and in the homes. No amount of broadcasting of general information on

child hygiene can take the place of personal first-hand training in a definite situation.

The educational measures which could be used to advantage may be summarized as follows:

1. Mothercraft classes in public schools, with actual demonstrations in infant welfare centers and nursery schools
2. Prenatal group instruction at health centers or in obstetric outpatient departments
3. Prenatal education by monthly letters, pamphlets, and carefully edited press articles
4. Individual instruction by doctors and nurses in private practice, and in prenatal centers
5. Encouragement for mothers to go early to their physicians for prenatal examination and have regular follow-up by public health nurses

Some form of maternity benefit or savings is urgently needed in this country to meet the extra expenses incurred during pregnancy. This need not in any way interfere with routine medical practice, nor disturb the personal relationship between physician and patient. The experience of several life insurance companies in extending prenatal and postnatal nursing care to their industrial policy holders warrants a wider acceptance of the insurance principle applied to maternity care.

Revision of birth certificates and maternal mortality reports is desirable, that they may state clearly the circumstances before and during birth. It is impossible, with our present certificates, to trace many important facts relating to physicians or others in attendance upon the mother. No information is given regarding prenatal care nor definite indications of obstetric operations performed. More detailed study of stillbirths, neonatal deaths and maternal deaths should be made by local health authorities. Publication of standardized reports from maternity hospitals and maternity homes should be made obligatory and the data and nomenclature used by all should be sufficiently uniform to be comparable.

Notification of births within from 24 to 36 hours with a report on the condition of mothers and babies would aid materially in making possible suitable nursing follow-up. This has been done in England and Scotland for some time with excellent results. Every mother should have not only a skilled, judicious physician at the time of delivery, but also a capable trained nurse, who can give postnatal as well as prenatal care. An extra pair of trained hands at delivery would also afford greater protection to mother and babe.

One of the greatest problems today is abortion. Some way to limit the number of abortions must be found if the number of maternal deaths is to be reduced. Available statistics indicate that a number of such deaths follow abortion, usually induced. Educating women to the dangers of this practice is not enough. Unless we are courageous enough to handle the abortionist as a public menace, secure his prosecution, and exclude him from our medical associations, we will accomplish little. At present the professional abortionist wears sheep's clothing. He practises on the élite and the hoi polloi alike.

Public health authorities have a right to know under what conditions mothers are being delivered and the risks to which they are exposed. They have already acquired power to inspect, license, and supervise midwives, and there is no reason why they should not know the facts regarding confinement in maternity homes and lying-in hospitals. The relative safety of such institutions should be determined by investigation by the local health authorities. The results of such a study may profitably be taken up with the medical society, together with suggestions for improvements. A detailed investigation of every maternal death would also yield valuable information which should be of service to both the medical profession and health authorities.

The problem of suitable obstetric service in rural districts can be solved to a great extent by the provision of county or district hospitals with maternity service, and by the extension of public health nursing. If the medical profession cannot meet the pressing demands of rural districts and certain areas of the South, where the largest midwife practice now prevails, there seems to be no logical reason why we should not give additional training to our registered nurses and license them to care for normal obstetric cases. This is being done with great success in a number of foreign countries and by the Pioneer Nursing Service in the Kentucky mountains. Either the medical profession must meet this emergency, or it will be solved in some other way by the community.

It is evident that there has been a diminution of the child hygiene work since the Sheppard-Towner Act expired. The appropriation in some states has been definitely cut, while in others the work has been hampered through political motives. While theoretically each locality should look after its own maternity and child hygiene problems, this is practically impossible in small towns and wide stretches of country without state or federal assistance.

The greatest danger at present is that health departments may attempt to live on their reputation for sanitation and be content with reduction of infant mortality by "tried" methods, rather than extend

exploration to other fields and attempt to convince communities of the need for broader public health measures.

The condition of mother and child immediately after birth depends largely upon prenatal and intranatal conditions. Thorough care of the new-born as to feeding, prevention of infections, etc., is necessary. Breast feeding is very important, especially in the early weeks, and cannot be stressed too strongly. Follow-up in the homes by competent nurses, after mothers have left the hospital, is most important. This can be accomplished best and most reasonably by well trained public health nurses. As a matter of fact the public health nurse is really the key to child hygiene. As health educator, home visitor, follow-up worker, she is in a strategic position. It should be understood clearly that not only the prevention of mortality among mothers and babies interests us, but also the morbidity—the damage which they suffer as a result of childbirth. The prevention of ophthalmia neonatorum is an excellent illustration of what can be accomplished by central public health authority backed by reasonable laws.

The technics of infant care after 1 month of age and through the first year of life are fairly well defined. They consist essentially in periodic examination by the physician, careful direction of feeding and hygiene, and prevention of infection. These measures may be employed in infant welfare centers or by a private physician in his own office. In a number of large cities, from 50 to 70 per cent of the babies now reach the hands of physicians for preventive care.

While in theory it is admirable to "consider every physician's office a health center," in practice it is impossible to establish such an attitude on the part of many parents. Most physicians are not equipped to attract and handle a large number of babies in their private practice. Furthermore, parents of the lower and middle economic classes cannot afford such service for well babies. It is essentially a function of the local health authorities to provide for the examination and hygienic supervision of *well* babies. This is done best through infant welfare centers as a part of community health centers. It will always be possible to secure the services of young physicians, well trained in pediatrics, to attend such centers. These physicians should, of course, be paid for each clinic hour in attendance. The sick babies should be referred to private physicians, or to babies' dispensaries or hospitals when the parents cannot afford to pay. Experience has demonstrated that this type of service has increased rather than diminished preventive pediatrics in private practice.

At present a certain amount of lag in our infant welfare program is due to the reactionary tendency of some physicians to look upon the

health care of young children as their private prerogative and to discourage the growth of local health centers. As only the well-to-do and better-off of the middle class can really afford to pay for systematic care of well babies, it is in the interest of community welfare to see that careful examination and hygienic regimen are available for all babies, either at the hands of the family physician or in health centers.

While a great deal has been done to encourage vaccination and toxin-antitoxin immunization, more is required, especially in the first year of life. There is a tendency, even among some physicians, to defer vaccination and diphtheria immunization. These measures should be offered in infant welfare centers as part of the general preventive work, until private physicians make more adequate provisions for them.

While protection against measles by use of convalescent serum or adult blood has not been widely practised, in New York City and elsewhere it has been thoroughly demonstrated that it is practical for a local health department to collect such blood and make it available to practising physicians. Similar provisions should be made for the collection and preservation of immune poliomyelitis serum.

To sum up: The practical application of community child hygiene measures may be effected:

I. *For the Infant before Birth* by:

1. Parental and pre-parental education, carried on through the public schools and extension divisions of universities, and by the local health authorities
2. Encouraging expectant mothers to place themselves early in the care of a competent physician and nurse
3. Systematic follow-up on the part of public health nurses
4. Some practical means of savings or maternity benefit
5. Protection of mother against infectious diseases and provision of adequate nutrition
6. Freedom from industrial stresses and strains, especially during the latter months of pregnancy

II. *During Birth*—the safety of both mother and child is almost entirely in the hands of the physician and nurse and depends largely upon:

1. Better obstetric training for both physicians and nurses
2. Competent nursing before, during, and after birth
3. Hospitalization of obstetric cases under suitable safeguards
4. Discouraging of bizarre or hurried obstetric practice
5. More complete reports on maternal mortality, stillbirths, and neonatal deaths with a thorough investigation of each case

III. *After Birth*—the immediate results are largely in the hands of the physician and nurse, but depend upon good prenatal and obstetric care. There should be:

1. Prompt notification and registration of births
2. Follow-up of all births by public health nurses
3. Regular, systematic examination of all well babies, and supervision as to hygiene and preventive pediatrics
4. Prevention of communicable diseases by immunization where possible

Practical application of child hygiene depends upon preventive obstetrics and pediatrics, the organization of local health centers, and thorough follow-up by public health nurses.

Dental Decay and School Work

A STUDY of over 19,000 elementary school children was recently made in Magdeburg, Germany, for the purpose of ascertaining the relation between dental decay and poor school work. Only cases of decay of both the permanent and the milk teeth were considered. Of the 19,000 children nearly 1,200 were retarded.

It was found that dental decay as defined above was 11.5 per cent more frequent among the retarded children than among those who were regularly promoted. More than one-half of the retarded children with dental decay belonged to the poorer families, such as low paid clerks, laborers, and widows without means. Somewhat similar data were obtained in other studies. It was also found that 68 per cent of the retarded children in the present study had had rickets in their early childhood, while other investigations of school children in general showed a percentage of rickets varying from 21 to 45.

The investigator came to the conclusion that hygienic and economic conditions of the child's environment and also rickets are the cause of the higher rate of dental decay among the retarded children; also that extensive dental decay often impairs the child's nutrition and results in poor school work, and rachitic children are more likely to be thus affected than those free from rickets.—*Gesundheitsfürsorge für das Kindesalter*, Berlin, 6, 1: 1–28, 1931.

The Community Health Program as It Applies to the Child of from One to Six Years*

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COMMENDABLE, indeed, and in keeping with the progress of the day, is the increasing appreciation of the significance and importance of adequate programs for child health conservation. It has been well said that a community's child health program is an index of its intelligence. There is an increasing realization of the fact that the nation's greatest asset is the health of its children. This viewpoint is not a new one. It contrasts with the days of ancient Greece and Rome only because in those days it was frequently left to the judgment of the State whether a child might be permitted to live, whereas today our child health program gives evidence of the community's interest in the principle that every child has a right to be born well.

We know much about the prevention of disease and the promotion of health among the young and yet, unfortunately, necessary expenditures for the development of adequate programs for life extension in this group are not being provided. Many supposedly intelligent communities still exhibit an unmindfulness of Dr. Dublin's emphasis on our true wealth measured in terms of the earning power of our human resources. One would hesitate, and almost question the need of emphasizing the value and significance of child health programs to a group of public health workers, were it not for the absence of the same from many communities.

Dr. Bolt has presented his views on the infant before, during and after birth. His emphasis on the relative values of prenatal services, adequate care at childbirth and during the first year of life, is of exceeding importance to the well-being of the child of from 1 to 6 years of age. He has very properly stressed the significance and importance of periodic medical supervision during the first year of life. It is, of course, fitting at this time to make mention of the value and impor-

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tance of the continuance of this routine medical supervision for the child of from 1 to 6. It is perhaps pertinent to establish a minimum standard for such examinations of at least once every 6 months, if more frequent ones are impractical or impossible.

It is quite generally agreed that the preschool age child, of whom there are about 12 million in the United States, furnishes a most excellent opportunity for intensive health effort. Everyone charged with the responsibility for the development of community health service should exhibit a mindfulness of the possibilities that exist in this age group for future good health—physical, as well as mental. This has been aptly called the "plastic" age and, unfortunately from the viewpoint of general accomplishment, the neglected age. Mothers who have rather frequently brought their babies to child health clinics periodically appear to have presumed that after these youngsters have arrived at the age of 1 year there would be no further need for medical supervision, and have abruptly ceased to bring them to either doctor or clinic. It is this attitude by parents, in view of our knowledge and experience, that justifies the correct presumption that this is, indeed, the "neglected" age.

MORBIDITY AND MORTALITY IN THE PRESCHOOL AGE

The general susceptibility of this group to disease and its unpleasant results call for the exercise of all well known measures for the control of these conditions. We are fundamentally aware of the exposure and susceptibility of this group to communicable diseases, and this immediately suggests the importance of organization on a basis to assure a maximum of possible prevention, as well as control, both through the instrumentality of immunization as well as of isolation. We are informed that four-fifths of all of the deaths which occur from contagious diseases are in children under 5, and also that of all deaths in all age groups from all causes 25 per cent occur in children under 5. This is a challenge to the imaginations and consciences of all intelligent health officers and calls for a program for the prevention and control of these diseases among the young.

PHYSICAL DEFECTS FOUND IN PRESCHOOL CHILDREN

Examinations of preschool age youngsters upon entering school have revealed a high percentage of physical defects, among the most prevalent being defective teeth, enlarged or diseased tonsils and adenoids, defective breathing, defective vision, defective hearing, nervous defects, and undernourishment. It requires no stretch of the imagination to appreciate these visible handicaps of children just entering

school and faced with the problems of school life. It seems self-evident that a program for the periodic physical examination of preschool age children for the purpose of keeping well children well, as well as the ascertainment of existing physical defects and the eradication of the same, is exceedingly necessary and important before this child is sent to school.

A PRACTICAL HEALTH PROGRAM FOR THE PRESCHOOL AGE CHILD

What are the possibilities and how practically possible is a sound program for this group? It is, of course, easy theoretically to visualize a program for health conservation in any age group, of setting maximum standards and including in a scope of activities all of the public health services which appear to be important. We frequently, however, find this extreme not only impractical but more frequently impossible. It is the middle of the road which we must seek, and justify only the most important and necessary of services.

While we recognize the true value and importance of habit forming clinics and their significant value in this age group, we may, except in the rare instances of communities rich in appreciation of the significance in value of mental hygiene, be content with the type of mental hygiene which may be furnished by the intelligent nurse and the physician of vision, perhaps, wherever possible, guided by the trained mental hygienist.

While we know the importance of proper posture we may find it impractical to spend much money in some communities for posture clinics.

NECESSARY FUNCTIONS

What services would appear essential in a community program for the child of from 1 to 6? All public health workers grasp the full significance of value and importance of periodic medical supervision of the apparently well child. This examination serves both its primary purpose of keeping the well child well, and that of determining its physical defects and needs.

The organization of the well baby clinic is one with which you are all familiar. The place of the public health nurse who is the bridge between the home and the clinic is well recognized. Much of the child's health progress, both physical and mental, is dependent upon the intelligence and vigilance of the nurse, who can play so important a part as health educator of the family.

Opportunities for the development of proper nutrition and health habits among this group are enormous and exceedingly important for

future good health. Diet and health are intimately related and no age group furnishes so excellent an opportunity for the development of proper dietary habits and values. Faulty food habits furnish one of the perplexing problems in the field of habit formation.

Dr. Gesell informs us that the rate of mental growth in infants is indeed very rapid, and stresses the value and significance of bringing mental hygiene within the scope of the infant and child health conference. Dr. Adler informs us that habits and traits, and character itself, are formulated before the age of 5. It is difficult for every community to set up expensive mental hygiene and habit forming clinics. It is to the intelligent conference physician and equally intelligent public health nurse that communities must look for practical solutions in the fundamental principles of mental hygiene.

We hear much about dental health. We are quite reliably informed of the relativity of the temporary teeth as a guide to the proper development and occlusion of the permanent teeth. Certainly, dental prophylactic habits acquired during early child life will remain through adolescence and adult life. This emphasizes the significance and obligation for the development of dental clinics for the young.

Studies of body mechanics by the Children's Bureau have led to the definite conclusion that proper posture is an important factor in health and that the early training of body mechanics is of significant value. I am mindful again of the difficulty many health officers will have in their endeavors to justify posture clinics for the young, and yet any attempt to outline a community program for this age group must at least allude to the relative importance of posture to health. Here again the well trained nurse may do much.

One must not lose sight of the relation of the day nursery to public health and the need for medical supervision of this group of children intrusted to the care of this type of institution. I desire only to stress at this time the importance of the adequate supervision of the physical plants themselves and the opportunity provided for medical supervision.

It is important to remember that a child has a right to play. It is a natural reaction of childhood. Nature has very satisfactorily provided that there shall be an outlet for a growing child's energy, and at the same time assists in the development of mind and muscle. Particularly today our urban life, with the hazards of the street, calls for consideration for the development of recreational facilities as a part of the community health plan. I realize that one may question the responsibility of health departments for the development of recreational facilities, but one will less seriously question the use of the influence of

the intelligent health officer in the direction of the development of this very necessary community service.

We are familiar with the possibilities for the prevention of smallpox and diphtheria. One who is familiar with the progress of medicine has a reasonable right to presume that within not too long a period science will contribute much to the knowledge of the prevention of many other diseases which now appear only in a measure conquered. As science contributes to this knowledge, so will intelligent health officers avail themselves of this and regard it as part of the justifiable programs.

THE FAMILY PHYSICIAN AND PUBLIC HEALTH

No intelligent health officer fails to exercise a true mindfulness of the very significant and important part which the private practitioner —the family doctor—can and should play in the prevention of disease and the promotion of health. While the health officer cannot logically exclude from clinics supported by taxation the child of the taxpayer, he will however morally support, and will lend his material aid to a campaign for the education of the community in regard to the ability of the family physician to participate in the promotion of the public health.

CONCLUSION

May I present briefly the summary of what I would regard as a program for community health for the child of from 1 to 6, applicable to varying communities, rural or urban, leaving to others charged with the responsibility for planning, to determine as to size of area, pooling of resources, etc.?

1. The primary requisite is well qualified medical direction, whether it be the private practitioner or the pediatrician functioning in the clinic.

2. Second only to the well qualified physician is the well trained nurse fundamentally grounded in public health and sufficiently interested to perfect herself in the fundamentals of mental hygiene, posture, and other public health activities of merit. Both the physician and the nurse must play the all important part of creating a sufficient interest in the minds of the parent as to the possibilities for child health conservation.

3. Nutrition, mental hygiene and posture shall be sufficiently considered, limited in their scope only by the amount of money available for this service.

4. The significance of dental prophylaxis should be recognized by the development of facilities for not only the school child but for the preschool age youngster.

5. Allusion has already been made to recreation, supervision of day nurseries, etc. I allude at this time to tuberculosis prevention, not because of the failure to grasp its relative significance and needs, but rather because I should prefer to re-

gard it as a condition preventable through sufficient emphasis on diet, nutrition, health education, isolation, etc., as factors playing a part in the prevention of this disease.

6. Control of communicable disease by immunization, quarantine, isolation, etc.
7. Facilities for correction of defects.

It is difficult to find the yardstick with which to measure the completeness of your program. The breadth of your vision, the resources of your community—the intelligence of the people you serve, will be, I am sure, the index of your efforts. I am mindful, indeed, of your own personal interest and willingness at all times to do everything possible for the realization of this most commendable purpose and ideal, the promotion of health and prevention of disease in children.

Aeroplane Sewage Disposal

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I HAVE recently undertaken an aeroplane trip of approximately 2,000 miles. A toilet was available in the planes, for the use of the passengers, which consisted of a modern and comfortable seat, over a lower opening of about 6 inches in diameter which led to the great open space between the plane and the earth below. There was also a washbowl in one corner from which a drain pipe emptied into the side of the toilet bowl.

Railroads contaminate the soil notoriously over a definite course which is taken into consideration when planning the water supplies for villages and cities. Aeroplane traffic may contaminate any region, any water supply, and indeed any reservoir, in view of this promiscuous distribution of human excreta.

It seems urgent that public health authorities take immediate action to eradicate this menace to pure water supplies over our entire country. I have observed a detachable vessel to receive human excreta in British passenger planes, and corresponding or equivalent precaution should be practised by American aeroplane companies.

The Community Health Program as It Applies to the Child from Six Years to Adolescence*

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WE are discussing the child as a whole in relation to the social group and not merely as a little organism with enlarged tonsils, carious teeth, faulty health habits, or unfortunate health attitudes. I hope we can add to this wholesome recognition of the individual a more vivid realization of the fact that our health programs must fit the child's needs and capabilities rather than have the child fit our programs.

I should like to direct attention to the present conception of a community health program, but particularly to a consideration of how a child from 6 years of age to adolescence can secure the essential health services that will enable him to develop to his highest potentiality both mentally and physically.

It may clarify our discussion if we review very briefly the evolution of what we are pleased to call a community health program. At present this term has a varied interpretation. The services it includes have been developed from differing points of view and by numerous specialized groups. This method of development of our social service institutions is inherent in the American scheme of things. It has both advantages and disadvantages. Notwithstanding the complexity of the development of the parts of the health program there is beginning to emerge a unified conception of what is essential to a well rounded community health program. A large share of the credit for the hastening of this has been due to the work of the Committee on Administrative Practice through the development and use of the *Appraisal Forms*.

A bird's eye view of the present status of our community health program can be secured through a brief discussion of 3 important

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phases of the American public health movement—these have been described as the sanitary, bacteriological, and personal hygiene phases.

The early stages of the sanitary phase was marked by a reign of terror caused by various epidemic diseases. With these epidemics attributed to all sorts of strange influences the methods of control were necessarily weird and ineffective. As our knowledge of the true causes of disease increased, the control of the environment scientifically yielded some of our most dramatic and effective solutions of public health problems, until today it is taken for granted that every community will see to it that all its members can be assured of pure water, safe milk, wholesome food supply and a freedom from nuisances detrimental to the public health. The danger in the taken-for-granted attitude is that some of these essential services may be neglected for some of our newer and more interesting procedures.

The growth of the science of bacteriology and its application to the control of disease marked another important phase of the health program. The discovery of the exact causes of some of our fatal maladies among living organisms opened up new possibilities of disease prevention. A gradually lengthening list of diseases has been placed in the communicable column. The laboratory has devised for us an increasing number of vaccines and serums—effective for the prevention and cure of specific sicknesses. Out of these researches have grown some of our most effective specialized campaigns against particular maladies, such as tuberculosis and venereal diseases. We have gradually developed an effective set of procedures for the control of communicable diseases; so our mythical 6 year old has a right to expect adequate protection both in the school and in the community.

Brilliant as have been the triumphs of the microbe hunters, their work has led inevitably to the last, the personal hygiene phase of the health program. This has been characterized by the turning of our attention more and more toward the individual. This change of emphasis has been brought about by the realization that further progress in disease control was dependent upon the education and the cooperation of the individual. More important still has been the increasing interest in health promotion as a part of the health program.

This period of our development has witnessed a broadening of the scope of the health program. Instead of depending entirely on the health official, we have had the extension of health work into the schools, the organization of numerous voluntary associations, and the establishment of foundations. Official and voluntary agencies have promoted maternal and infant welfare work, medical supervision of school children, public health nursing, mental hygiene and social hy-

giene. Most of these services have grown out of the special interests of small groups of people in a particular health problem.

The method of their development has frequently resulted in misunderstanding, and at times in conflict. Nevertheless we have now arrived at a period where we have available a well organized body of knowledge in each of these specialized fields, and of equal importance. We have well tested technics for the application of this knowledge. The major problem which remains is the integration of these specialized services into a well unified whole—a real community health program. It is the particular part of such a program as it applies to the child from 6 years until adolescence that we wish to discuss.

Fortunately for the child of school age, an adequate school health program is coming to be considered an essential part of a modern educational system. This is only just, when we consider that approximately one-seventh of our population is in this age group. Neither the child nor his parents have any choice as to where he shall spend this very sensitive and plastic period of his life. It is gratifying that such a large number of educators are translating the announced health as an objective of education into a functioning health program in the schools.

Our present health program in the schools has come down through a number of stages and from a variety of sources. A brief mention of some of the more important of these will serve to recall the explanation of the rather diverse and sometimes discrete health activities in the schools. The story of the evolution of these is interesting. One might begin a description at any one of a number of points. We will select the entrance of the physician into the schoolroom. He was called in as an emergency measure to try to stop an epidemic disease. Once inside the schools, he remained to discover that large numbers of the supposedly normal children had physical defects which were handicapping them both mentally and physically. While seeking to assist in solving these problems, the trained school physician has moved toward the still more important field of health promotion. Important as the work of the physician is in the schools, medical inspection alone does not constitute a health program, for you cannot inspect children into health.

Health instruction in the schools has had an interesting history. It originated as part of the effort of an interested group in fighting the use of alcohol and tobacco. In many states physiology and hygiene became required subjects. This led to a form of mechanized teaching that has been aptly called "blood and bone physiology," but with the birth of the modern health education movement, health instruction has

taken its place as one of the fundamentals of any well rounded health program, though all of us are convinced that you cannot instruct the child into health.

Our picture would be incomplete without a mention of the growth and development of physical education in its health aspects. We are all familiar with the early efforts to improve health by means of formal exercises. Then came the gradual development of a more modern plan with all of its important contributions to the improving of the functioning of both body and mind. No school could be considered as having a well rounded health program without physical education. We are sure, however, that it is not impossible to exercise children into health.

From these three main sources have arisen the widely diversified and frequently unrelated health activities in our school systems. A recent study of the character, scope and results of the school health program in representative cities in various parts of the United States has shown that there is neither uniformity nor unity in methods or administration.

Notwithstanding the wide diversity both of origin and method of health activities there has come to be a well defined opinion as to the minimum essentials we have a right to expect to be made available in every community for the child of school age. These essentials may be classified as: health instruction and training; medical supervision; hygiene of the school program; and hygiene of the school plant.

Health instruction and training are now taking their proper place in the regular curriculum of the school. We no longer expect the classroom teacher to be able to teach hygiene without special preparation. If the school health program is a good one, we will find a well planned program of training in health habits in the lower grades. As the child advances, health knowledge will be added. All of this, under skilled teaching methods, tends to the formation of ideals and attitudes that will tend to promote health.

Medical supervision of children and teachers is now recognized as an essential of every health program. If the obligation to safeguard the health of the child is to be met, it is no longer sufficient to call in the neighborhood physician on part time or in emergencies. The job of medical inspector requires special training and experience. Further, the work of the physician must be supplemented by sufficient trained and experienced public health nurses. This group of trained people will make available a system of health inspections for the control of communicable diseases. In addition, periodic health examinations of proper thoroughness will furnish a basis for the correction of

defects and an individual hygiene program adapted to the needs of the child.

The hygiene of the school program has an important bearing upon the levels of health attained by the child. Wise school administrators give careful thought to the length and arrangement of the program. The skillful use of rest periods and recesses goes toward permitting the child to make a successful hygienic adjustment to the school environment. It is fair for us to expect the health of the child to be improved rather than injured during his elementary school experience.

Finally, the hygiene of the school plant is one of the fundamentals of the health maintenance of the child. We have a responsibility to challenge the right of the state to compel the child to attend school in an improperly constructed, poorly lighted or inadequately ventilated building. Further, there is no possible excuse for the absence of proper sanitary equipment, including ample facilities for handwashing. All too frequently an excellent school plant is placed in charge of an unskilled, politically appointed, underpaid janitor. We should have janitors whose training and experience include the fundamentals of sanitary engineering.

These, in briefest outline, are the essentials of a health program in the schools for the child from 6 years to adolescence. We are all aware that some schools have parts of this program highly developed. Few have all of them functioning as a whole. This is a problem of administration. It means the placing of the health program in charge of a properly qualified person who has both the authority and the skill to weld the diverse interests and activities into a unit for the service of the child.

In conclusion, we seem justified in saying that the community health leaders should recognize the important claims of the child of school age for a high quality of health protection from the hazards of communicable diseases, impure water, contaminated milk, or unwholesome foods.

To the educators we can state that they have both a privilege and responsibility to assure this child a well rounded health program including all of the essentials which have now proved their value by the test of use.

To all of the health workers concerned with children we can appeal to participate heartily and unselfishly in the effort to integrate the diversified health activities into a unified program the sole purpose of which will be the service of the child in the effective way.

Present Status of Acidophilus Milk*

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ACIDOPHILUS milk continues to attract wide attention. Physicians are increasingly interested. Patients, suffering from widely differing complaints and in various stages of ill health, seek its aid.

On the other hand, the process of manufacturing acidophilus products is a difficult matter. A satisfactory product must contain an enormous number of living lactobacilli in such a vital condition that they will maintain their viability in sufficient numbers until the product is used. This apparently means that fresh strains must be isolated frequently, or at least they must be tested for their ability to implant themselves in the human intestine; and only effective strains must be put upon the market.

The possible value of sour milk as an article of diet was suggested and rationalized by Elie Metchnikoff. He studied and recommended for use a milk fermented by *B. bulgaricus,* which is still widely used in European and Asiatic countries. In America, a closely related organism has been generally recognized as possessing superior merits, and this has almost entirely taken the place of the Bulgarian bacillus.

In 1900, Ernst Moro,[1] a German investigator, found a distinctive, Gram-positive bacillus to be the predominant organism in the intestinal tract of milk-fed babies. Within the next few years his work was confirmed, the bacillus accurately described and named *B. acidophilus.* Quite recently, this germ, with its near relatives, has been transferred to a new genus by Miss Holland, and it is now known as *Lactobacillus acidophilus* (Moro) Holland.

In 1911, Rotch and Kendall[2] and in 1915, Rettger and his associates suggested the idea and presented evidence[3] that this organism might be advantageously used instead of *B. bulgaricus.*

Since 1914, about 10 articles have appeared each year, and, in ad-

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dition, two books dealing exclusively with *L. acidophilus* and its applications have been published.

The authors, in view of a somewhat extended research project, have attempted to acquaint themselves at first hand with the literature on this subject. In doing this, they have consulted 182 communications which deal either with *L. acidophilus* directly, or with the intestinal flora of man and experimental animals.

One of the problems which has interested investigators since the earliest days of bacteriology has been the germ content of the intestinal tract and, especially more recently, the possibility of modifying it by change of diet. We have found 66 papers dealing with this phase of the subject. It seems fair to summarize them by saying that when an infant is born its intestinal tract is sterile, but almost immediately bacteria enter, not only through food and other contacts of the mouth, but through the anus.

If the child is breast-fed, its early heterogeneous flora soon settles down to one that is predominated by an anaerobic relative of *L. acidophilus*, now called *Bacteroides bifidus*. In bottle-fed infants, the characteristic organism is *L. acidophilus*. As soon as children become accustomed to a mixed diet, their intestinal flora comes to resemble more and more that of adults. This adult flora, most authors agree, is made up of very few Gram-positive rods, and is rather of the enterococcus and colon bacillus type. This is regarded as normal. The intestinal flora of certain individuals, especially meat eaters, is of the putrefactive type and is regarded as abnormal and very undesirable.

A few adults have what is regarded as the most desirable type, the *L. acidophilus* flora of children, or the fermentative type. The common opinion of those who have investigated the matter is that the type of intestinal flora may be modified by changes in diet, and that the fermentative type may be stimulated by consuming liberal quantities of milk and certain supplemental carbohydrates, such as lactose and dextrin. These, in part at least, pass through the small intestine unabsorbed, ready to stimulate the growth of *L. acidophilus* in the colon if this organism should be present. However, it seems clear that diet alone cannot be depended upon to establish a fermentative type of flora except in rare cases.

Another problem has attracted attention: the possibility of implanting *L. acidophilus* in the intestinal tract by the use of massive doses of this organism with an ordinary diet or in connection with certain supplemental foods. We have found 18 articles on this subject, including one book,[4] which not only presents a great array of facts; but also carefully reviews the previous literature.

In 1926, Kopeloff's[5] excellent book on *L. acidophilus* appeared. In this the later contributions are discussed, and new material is presented. Since then, other articles have appeared. All of this literature is quite unanimous in maintaining the thesis that massive doses of the organism taken regularly over a period of days or weeks, especially with milk or certain carbohydrates, almost invariably establish *L. acidophilus* as a predominant intestinal organism, frequently to the practical exclusion of other forms.

Milk cultures probably offer the best means of supplying effective doses, but for various reasons milk concentrates, or *L. acidophilus* in mediums other than milk, are desiderata. Several have been proposed, and some at least are promising, but up to the present time scientific literature discussing their value is lacking.

The most essential question is: When implantation has been accomplished, will beneficial clinical results follow? We find that there are about 40 articles dealing specifically with this subhead, and a number of others indirectly.

Most of these deal with the treatment of chronic constipation. The results reported, with perhaps a single exception, have been highly satisfactory. Bassler and Lutz (1922)[6] maintain that the therapeutic value of *L. acidophilus* has been over-rated, and that benefits claimed are derived from a change in the reaction of the intestinal contents, due to the diet rather than to the presence of any organism. Their data are hardly detailed enough to be convincing. It is contrary to that of all other workers and should not be taken too seriously, since Kopeloff (1923)[7] and Kopeloff and Beerman (1923)[8] have quite clearly demonstrated that favorable clinical results are obtained only when fermented milk contains living organisms. The small proportion of unsatisfactory results reported may have been due to failure to secure implantation through lack of sufficient doses, or some other undetermined cause such as lack of supplemental carbohydrates. A 60 to 70 per cent change to the *L. acidophilus* type in the intestinal tract relieves constipation, and in many cases the benefits persist beyond the continuation of the culture or the carbohydrates. However, there seems to be some correlation between the permanence of the benefits and the length of time that *L. acidophilus* is recoverable from the stools. Some encouraging results have been obtained in the treatment of diarrhea and other intestinal infections.

There is still some confusion about the relation between *L. acidophilus* and its close relatives. The first American paper on this group was that of Kendall (1910).[9] He suggested the term aciduric as better than acidophilic, claiming that the organisms "endure" rather

than "love" acid. The generic name of Lactobacillus, proposed by Beijerincke (1901), has recently been officially adopted. Under this genus, Bergey[10] lists 35 species. There are two different types that need special mention in this connection: *L. bulgaricus* and *L. odontolyticus*.

L. bulgaricus is closely related to *L. acidophilus*, but gradually certain differences are being generally recognized. One is the action on maltose. Another was suggested by Albus and Holm (1925 and 1926).[11] They claim that the growth of *L. bulgaricus* is inhibited by a surface tension below 40 dynes, while *L. acidophilus* grows well in the same medium depressed as far as 36 dynes. These findings have been corroborated by Kopeloff and Beerman[12] in three papers (1926 and 1927). However, Day and Gibbs (1928)[13] arrived at quite different conclusions. They found that any differences in the growth of the two organisms are not due directly to surface tension, but rather to the toxic action of the depressants, and are not sufficiently marked to be of service in differentiating the organisms.

On the other hand, attempts to implant *L. bulgaricus* in the human intestine have almost always failed, while *L. acidophilus* is almost always reported as readily implantable. This should be expected, since it is quite generally recognized that the natural habitat of *L. acidophilus* is in the intestinal tract, while that of *L. bulgaricus* is in some outside environment, such as milk.

L. acidophilus is regarded by some authors as the cause of dental caries. This is not only because this organism is frequently found in the presence of decaying teeth, but also because experiments have indicated that dental caries may be produced *in vitro* by *L. acidophilus;* yet, careful studies by those well acquainted with *L. acidophilus* seem to show that the organism associated with dental caries may be quite definitely differentiated from *L. acidophilus*. Considerable evidence by competent investigators indicates that this should be regarded as a distinct species, for which the name of *L. odontolyticus* has been used.

The success and popularity of *L. acidophilus* therapy have led to the manufacture of a great many products containing the organism. The most universally accepted product, of course, is milk. Whey and fruit juice, carriers of the organism, undoubtedly are of value, but as yet are not widely used.

A number of attempts have been made to concentrate the bacillus into a product of dry or semidry nature. On the whole, these have not been successful. Rettger has stated that an acidophilus concentrate that combines the salient features of acidophilus milk would be a welcome substitute.

Finally, it is quite apparent that an acidophilus product of the highest quality is one in which an enormous number of *L. acidophilus* are present; these organisms must be viable at the time of consumption; and the strain must be one that is known to be readily implantable.

REFERENCES

1. Moro, E. Ueber den B. Acidophilus in N. Sp., *Jahrb. f. Kinderh.*, 52: 38–55, 1900.
2. Rotch, T. M., and Kendall, A. J. A Preparatory Study of the Bacillus Acidophilus in Regard to Its Possible Therapeutic Use, *Am. J. Dis. Child.*, 2: 30–38, 1911.
3. Rettger, L. F., and Cheplin, H. A. Therapeutic Application of Bacillus Acidophilus, *Proc. Soc. Exper. Biol. & Med.*, 19: 72–76, 1921.
4. Rettger, L. F., and Cheplin, H. A. *Treatise on the Transformation of the Intestinal Flora with Special Reference to the Implantation of Bacillus Acidophilus*, Yale University Press, 1921, 135 pp.
5. Kopeloff, N. *Lactobacillus Acidophilus*, Williams & Wilkins, Baltimore, Md., 1926.
6. Bassler, J., and Lutz, J. R. Bacillus Acidophilus: Its Very Limited Value in Intestinal Disorders, *J. A. M. A.*, 79: 607–608, 1922.
7. Kopeloff, N. Is the Action of Bacillus Acidophilus a Strictly Bacteriologic Phenomenon?, *J. A. M. A.*, 80: 602–604, 1923.
Is Bacillus Acidophilus Therapy a Strictly Bacteriological Phenomenon?, *Proc. Soc. Exper. Biol. & Med.*, 20: 123–124, 1923.
8. Kopeloff, N., and Beerman, P. Bacillus Acidophilus Therapy, *Sci. Proc. Soc. Am. Bact.*, pp. 28–30, Dec., 1922. (Abs. Bact., 7: 66, 1923.)
9. Kendall, A. J. Observations on Aciduric (Acidophilic) Bacteria, *J. Med. Res.*, 22: 153–167, 1910.
10. Bergey, D. H. *Manual of Determinative Bacteriology*, 1930.
11. Albus, W. R., and Holm, G. E. The Effect of Surface Tension on the Growth of Lactobacillus Bulgaricus and Lactobacillus Acidophilus, *Proc. Soc. Exper. Biol. & Med.*, 22: 337–338, 1925.
Surface Tension as a Factor in the Growth of Lactobacillus Acidophilus and Lactobacillus Bulgaricus, *Sci. Pro. Soc. Am. Bact.* (Washington Branch), Feb., 1924.
Effect of Surface Tension upon Growth of Lactobacillus Acidophilus and Lactobacillus Bulgaricus, *J. Bact.*, 12: 13–18, 1926.
12. Kopeloff, N., and Beerman, P. L. Acidophilus and L. Bulgaricus as Influenced by Surface Tension, *Proc. Soc. Exper. Biol. & Med.*, 23: 544, 1926.
Surface Tension Studies with *L. Acidophilus* and *L. Bulgaricus*, *J. Bact.*, 13 (1), 1927.
Surface Tension Studies, *J. Infect. Dis.*, 40: 656–666; and *Psychiat Quart.*, 1: 357–369, 1927.
13. Day, A. A., and Gibbs, W. M. Surface Tension in Relation to Bacterial Growth, *J. Infect. Dis.*, 43: 97–107, 1928.

Sunshine in the Laundry Bundle

PUBLIC health is being more and more prostituted by the advertisers who reach absurdities which scientific men would never suspect.

". . . Now comes a laundry in the city of Chicago which promises healthful cleanliness to every home through the application of ultra-violet and ozone to linens, towels, sheets and pillow cases. The slogan is 'Year 'Round Sunshine with Fresh Mountain Air.' Apparently the application of ultra-violet rays and ozone confers longer wear on the sheets and pillow cases which are 'sun-drenched with such healthful cleanliness.' Moreover, the advertiser asserts, 'You'll like the friendly feel you'll get between fresh, crisply clean, sunsweet sheets at bedtime.' One is tempted to cogitate as to whether or not such nocturnal enjoyment might not lead to insomnia. Perhaps the Ideal Wet Wash Laundry which 'puts sunshine in the laundry bundle when it rains' will make scientific studies necessary to establish the truth or falsity of this theory."—*J. A. M. A.*, May 2, 1931, p. 1508.

Transformation of the Intestinal Flora through the Feeding of Unfermented Acidophilus Milk*

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TO some who would like to take advantage of acidophilus therapy, the ordinary cultured acidophilus milk is distasteful. In view of this and also because the lactic acid in a fermented milk has been shown to have little or no value in bringing about a transformation of the intestinal flora (Kopeloff[1]), it was thought that a milk product which has the taste of ordinary sweet milk and yet is a means for carrying large numbers of *L. acidophilus* into the intestinal tract would meet a real need. Such a product has been developed and for lack of a better name has been termed unfermented acidophilus milk. This product has suspended in it a high concentration of viable *L. acidophilus;* yet has the taste and physical properties of a rich whole milk. The concentration of viable *L. acidophilus* is similar to that obtained in a good cultured acidophilus milk which usually has from 100 to 600 million *L. acidophilus* per c.c. as determined by the plate method.

Unfermented acidophilus milk is handled in the same manner as market milk and is manufactured for immediate consumption, although it is stable enough to be kept in good condition for several days. Since growth of *L. acidophilus* is inhibited by a temperature of 18°–20° C., the development of acid is almost entirely prevented by keeping the milk at a temperature below 10° C. Storing the milk at 2°–5° C. makes it possible to keep it sweet for as long as 7 days.

Because sweet milk is a more favorable medium for maintaining the viability of *L. acidophilus,* unfermented acidophilus milk does not decrease in count so rapidly as the sour acidophilus milk. Counts made after 4 or 5 days' storage in a refrigerator at about 2°–5° C. show that the death rate of *L. acidophilus* under these conditions is very low. As long as the temperature is kept sufficiently low this product is stable enough to be shipped considerable distances and kept

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TABLE I

UNFERMENTED ACIDOPHILUS MILK
FEEDING EXPERIMENTS WITH HUMAN SUBJECTS
Group I

Subject	Fecal Analyses—Plate Method *L. acidophilus* (X-type) % of Total Count							*L. acidophilus* Average % of Total Count
	April 30	April 30	May 6	May 9	May 14	May 19	May 24	May 9–24
No. 1	0	Started on unfermented acidophilus milk	14	10	56	1	51	29
No. 2	0		18	—	—	80	75	78
No. 3	0		81	92	59	72	60	71
No. 4	0		75	16	41	3	77	37
No. 5	0		13	88	35	60	10	48
No. 6	0		0	99	47	81	98	81
No. 7	–		22	93	56	57	58	66

in storage for a few days without injuring the product or destroying the viability of the acidophilus organisms. As a check on this point the unfermented acidophilus milk used in Group II of the feeding experiments was consumed when it was between 2 and 6 days old; and was capable of bringing about implantation of *L. acidophilus* in the intestinal tract.

This product is not stable unless it is kept cold, and souring is rapid at room temperature, 10° C. (or 50° F.) being about the maximum at which the milk can be stored satisfactorily. The whole milk in which the *L. acidophilus* organisms are suspended is given a higher heat treatment than is ordinarily given pasteurized milk. This reduces the con-

TABLE Ia

UNFERMENTED ACIDOPHILUS MILK
FEEDING EXPERIMENTS WITH HUMAN SUBJECTS
Group I

Subject	Analyses of Feces—Plate Method *L. acidophilus* (X-type) Millions per gram Feces						
	April 30	April 30	May 6	May 9	May 14	May 19	May 24
No. 1	0	Started on unfermented acidophilus milk	384	80	264	0	320
No. 2	0		176	—	—	3,440	2,340
No. 3	0		336	950	340	560	330
No. 4	0		568	50	444	1	660
No. 5	0		28	1,190	1,134	60	15
No. 6	0		0	460	204	390	100
No. 7	–		720	460	2,142	130	360

TABLE II

UNFERMENTED ACIDOPHILUS MILK
FEEDING EXPERIMENTS WITH HUMAN SUBJECTS

Group II

Subject	Fecal Analyses—Plate Method *L. acidophilus* (X-type) % of Total Count								Lactic Acid Average % of Total Count
	Aug. 25	Aug. 2	Sept. 3	Sept. 4	Sept. 6	Sept. 11	Sept. 16	Sept. 23	Sept. 6–23
No. 2*	0	0	0	Started on unfermented acidophilus milk	98	49	71	88	77
No. 3*	0	9	0		20	59	63	82	56
No. 5*	–	–	–		–	—	80	33	57
No. 6*	0	1	0		83	46	86	100	79
No. 7*	0	0	0		75	68	85	91	80
No. 8	0	0	0		67	69	99	47	71
No. 9	0	0	0		98	29	92	93	78
No. 10	0	0	0		55	11	40	33	35
No. 11	–	–	0		92	93	99	77	90

* Subjects in Group I.

taminating organisms to a very low count. The *L. acidophilus* organisms are grown in a sterilized medium and freed from it in such a way as to avoid contamination. They are then suspended in the pasteurized milk by procedures which reduce the chances of contamination to a minimum.

After the development of the technical side of the manufacturing process, feeding experiments were conducted with white rats. The object of these was to determine if the cells of *L. acidophilus* suspended in unfermented milk are still capable of being implanted in the intestinal tract. In general, the procedures were the same as those described by Rettger and Cheplin.[2] Fecal samples were examined before the feeding period by plating on tomato juice peptone agar, the plates being incubated under a partial carbon dioxide atmosphere. Whey agar shake cultures were made of various dilutions of the fecal specimens instead of Veillon tubes.

In these as well as in the experiments with human subjects our chief criterion for judging whether satisfactory implantation had been obtained was the isolation from fecal plates of high dilutions of the type of *L. acidophilus* which was being fed. We consider this method the most dependable way of determining whether implantation has been accomplished. Though we tried some of the other methods—Gram stained microscopic smears and whey agar tubes—we were inclined to put much more weight on the plate method than on the others. The

results were as follows: Successful implantation was obtained in 4 white rats fed, in addition to the bread and meat diet, 5 c.c. of unfermented acidophilus milk daily. Two of these were put on a bread and meat diet at the end of the 2 weeks' feeding period. After they had been on this diet for a month, and were found to have no *L. acidophilus* in their feces, they were again fed unfermented acidophilus milk and successful implantation was obtained within a week. Two rats were fed 5 c.c. of a cultured acidophilus milk for comparison, and successful implantation was obtained also in these. These preliminary results indicated that the organisms suspended in unfermented milk were not injured in the manufacturing process and were capable of being implanted in the intestinal tract.

The next step was to determine: (1) whether the lactobacilli which were suspended in unfermented acidophilus milk can be implanted in the human intestinal tract, and (2) to what extent the human intestinal flora can be transformed to a simplified Gram positive type by the regular feeding of unfermented acidophilus milk. Two groups of experiments in which 11 individuals drank unfermented acidophilus milk for periods of 3 weeks were conducted. The first group lasted from May 6 to May 24; the second from September 4 to September 23. In the second group were included 5 individuals who were also in the first. Most drank a quart of unfermented acidophilus milk daily, though some varied from this amount and occasionally went for 2 or 3 days without. However, on the whole, the consumption of milk was regular. Each person continued on his regular diet, though some remarked that the amount of their regular diet was decreased.

TABLE IIa

UNFERMENTED ACIDOPHILUS MILK
FEEDING EXPERIMENTS WITH HUMAN SUBJECTS

Group II

Subject	Analyses of Feces—Plate Method *L. acidophilus* (X-type) Millions per gram Feces							
	Aug. 25	Aug. 29	Sept. 3	Sept. 4	Sept. 6	Sept. 11	Sept. 17	Sept. 23
No. 2*	0	0	0	Started on unfermented acidophilus milk	1,920	1,710	1,370	141
No. 3*	0	63	0		249	274	109	800
No. 5*	–	–	–		—	—	237	15
No. 6*	0	0	0		110	73	708	490
No. 7*	0	0	0		460	300	780	510
No. 8	0	0	0		189	270	297	80
No. 9	0	0	0		616	73	660	1,520
No. 10	0	0	0		54	16	87	117
No. 11	–	–	0		141	1,330	1,100	57

With the exception of No. 11, a woman, all were men. Nos. 7 and 10 were slightly under 20 years of age, No. 5 was elderly, the others were in their third decade. The subjects were healthy and normal except that a few were subject to slight constipation.

Examinations were made of fecal specimens before the subjects began drinking the unfermented milk, and thereafter every 4 or 5 days. Tomato juice peptone agar or digested milk agar plates were used in determining the number of viable cells of *L. acidophilus* per gm. of fecal material. Smears stained by Gram's method were prepared and observed but no counts were made.

Tables I and II show the percentages of acidophilus present in the feces, and in Tables Ia and IIa are recorded the *L. acidophilus* counts per gm. of fecal material. Tables III and IV give information on the unfermented acidophilus milk used.

TABLE III

UNFERMENTED ACIDOPHILUS MILK USED IN FEEDING EXPERIMENTS

Group I

Date of Manufacture 1930	Analyses made 3–5 days after Manufacture (Samples stored at 2°–5° C.) pH	*L. acidophilus* Count per c.c. (Digested Milk Agar)
May 1	6.30	333,000,000
" 3	—	105,000,000
" 6	6.00	423,000,000
" 8	—	92,000,000
" 10	—	309,000,000
" 13	6.40	160,000,000
" 15	6.18	760,000,000
" 17	6.35	800,000,000
" 20	—	156,000,000
" 22	6.15	265,000,000
	Average	340,000,000

In all the experiments *L. acidophilus* of the X-type was used, though different strains were employed. These grow readily in milk, and a 2 per cent inoculation brings about curdling in from 16 to 18 hours' incubation at 37° C. They grow in digested milk at pH 8.0, and tolerate a concentration on phenol of 1:400 and a concentration of indol of 1:1,420. The colonies on tomato juice peptone agar are extremely filamentous. Culture RL8A (used in Group II of the human experiments) tends to grow slightly more compactly than the others. These cultures are Gram-positive slender rods occurring singly, in pairs and occasionally in chains of 3–4.

TABLE IV

UNFERMENTED ACIDOPHILUS MILK USED IN FEEDING EXPERIMENTS GROUP II

Average of Analyses made on 2d and 4th Days after Manufacture
(Samples stored at 2°–5° C.)

Date of Manufacture 1930	pH	*L. acidophilus* Count per c.c. (Digested Milk Agar)
Sept. 2	6.52	390,000,000
" 4	6.49	372,000,000
" 6	6.45	631,000,000
" 8	6.33	748,000,000
" 10	6.60	218,000,000
" 12	6.48	639,000,000
" 15	6.59	514,000,000
" 17	6.51	508,000,000
	Average	402,000,000

SUMMARY AND CONCLUSIONS

1. It has been shown that the cells of *L. acidophilus* which are suspended in unfermented acidophilus milk are capable of being implanted in the human intestinal tract. It appears, then, that the process of manufacture does not injure the viability of the organisms and that the most important consideration is the use of a strain of *L. acidophilus* which is adapted for growth in the intestine.

2. In the 16 experiments on human subjects, successful implantation of *L. acidophilus*, as determined by the plate method, was obtained in each case. In 12 of the 16 experiments a predominant *L. acidophilus* flora was obtained by the regular consumption of approximately 1 quart of unfermented acidophilus milk per day, no other modification of the ordinary diets of the subjects having been made.

REFERENCES

1. Kopeloff, N. *Lactobacillus Acidophilus.* Williams & Wilkins, 1926, pp. 112–116.
2. Rettger, L. F., and Cheplin, H. A. *A Treatise on the Transformation of the Intestinal Flora with Special Reference to the Implantation of Bacillus Acidophilus.* Yale University Press, 1921.

Studies on the Viability of *L. acidophilus* in "Acidophilus Milk"

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EXPONENTS of acidophilus therapy agree that, regardless of the method of administration, satisfactory therapeutic effects are dependent upon the use of cultures which contain large numbers of viable organisms. Those who have opposed the employment of broth cultures and various so-called concentrates have maintained that these preparations may fail in part because they do not preserve the viability of *L. acidophilus* for any appreciable length of time. Long experience with acidophilus milk has shown that milk constitutes a particularly favorable medium for the growth and continued viability of this organism.

It seems to be the consensus of opinion that acidophilus milk should contain at least 100 million viable organisms per c.c. when it reaches the consumer. When authentic and vigorous strains of *L. acidophilus* are employed, properly prepared acidophilus milk should contain from 500 million to 1 billion viable bacilli per c.c. at the time the product is bottled. It is essential that the producer maintain a high viability in his product in order that the consumer may secure the full therapeutic effect. When the manufacturing plant is so located that the milk can be used within 48 to 72 hours after preparation, this is relatively simple. However, under present methods of distribution a considerable quantity is from 3 days to 2 weeks old before it is used. It is imperative, therefore, that the product be of the highest purity and viability in order to meet the most rigid requirements during storage.

Commercial acidophilus products are being examined by state and federal laboratories, and it is quite possible that in the near future legislation will be enacted which will require them to meet certain standards, particularly as regards viability.

Kopeloff and Berman[1] studied the effect of storage temperature on *L. acidophilus* in milk, and claimed that there is an enormous decrease in the number of viable bacilli when acidophilus milk is stored in the refrigerator, and that this does not take place when stored at ordinary

* The greater part of the work reported in this paper was completed in the laboratories of the Yale University School of Medicine where the author was Assistant Professor of Bacteriology until July 1, 1930.

room temperature. Hence, they recommend storage at room (20–30° C.), instead of icebox, temperature. Since the commercial distribution of acidophilus milk has attained considerable proportions, it appeared advisable to make further inquiry into the question of viability of *L. acidophilus* during prolonged storage.

It is impracticable for the producer of commercial acidophilus milk to store this commodity at room temperature because (1) The commercial product is rarely pure culture. Given a small initial contamination, and high *L. acidophilus* count, storage at room temperature (above 20° C.) may cause a decided increase in the numbers of contaminating forms, with resultant damage to the milk on account of the corresponding decrease in number of viable *L. acidophilus* cells which naturally takes place, and as a rule the production of "off" flavors and odors. (2) Storage at room temperature promotes the continued action of saccharolytic enzymes, with resultant increase in acidity. Within a few days the milk may become so sour as to be unpalatable.

Since acidophilus milk does not appreciably change in acidity at temperatures below 20° C., and since lower temperatures will inhibit or at least greatly retard the growth of most contaminating forms, particularly in a medium as acid as this normally is, the writer has sought storage conditions which will conserve the maximum viability of the organism without changing to any great extent the specific characteristics of the product.

An authentic human strain of *L. acidophilus*, typical in all respects, was employed in the majority of the experiments reported, though several other strains of either human or rat origin were used in some of the comparative tests. All strains gave essentially the same general results. Typical *L. acidophilus* organisms have the following characteristics:

They are non-motile and non-sporing, Gram-positive rods which produce chiefly lactic acid in milk with traces of acetic acid, forming acid without gas in lactose, galactose, sucrose, maltose and levulose broths. The optimum temperature is 37.5° C., the minimum close to 20° C. Colony formation in special agar medium[3] is commonly of the rough or X-type, as described by Rettger and Horton.[4] Incubation in an atmosphere containing approximately 10 per cent carbon dioxide[5] enhances the growth of most strains; CO_2 is detrimental to none, and is necessary for some. When ingested along with lactose or dextrin, they will grow in the digestive tract of man, and may be recovered from the feces.

In the present investigation the main emphasis was placed on via-

bility as affected by: (1) initial and final reaction of the product, (2) storage temperature, (3) incubation temperature, and (4) butter fat.

The quantitative determination of living *L. acidophilus* was made according to the method of the author.[2] Tomato agar[3] was employed as the plating medium. Since the counts are very high, the error is obviously considerable and numbers are at best only relative. Accurate counts of *L. acidophilus* in milk cultures are out of the question, and differences of 10 or 15 per cent in duplicate platings are the rule rather than the exception. The acidity of the milk is expressed in percentage lactic acid as determined by titration with n/20 NaOH, phenolphthalein being the indicator. The number of viable *L. acidophilus* is recorded in all tables as millions.

Certain variation in counts should be discussed. In the course of many experiments the viable count determined after 1, 2, or 3 days' holding was greater than at the initiation of storage. This variation may be due to the acknowledged inaccuracy of the plating method. There also may be some multiplication during the first few hours of storage before the milk has reached the temperature of the chamber.

EXPERIMENT I

The influence of varying initial reactions upon the viability of L. acidophilus in milk culture stored at 12° C. and at room temperature, 23° C.

Eight flasks of sterilized skimmed milk were inoculated with *L. acidophilus* as follows: 2 at 8:10 A.M., 2 at 10:10 A.M., 2 at 12:10 P.M., and 2 at 2:10 P.M.; and after shaking were at once placed in a 35° C. incubator. Quantitative platings and titratable acidity determinations were made from one flask of each pair at 8:10 A.M. on the following day, after this one was stored at 12° C. and the other at 23° C. Viability and acidity were determined at stated intervals.

In this experiment (Table I) Kopeloff's claims regarding viability are supported to a certain extent. Viability of *L. acidophilus* continued higher at room temperature than at 10–12° C. during the earlier period of storage. After prolonged holding the results are reversed. However, after continued storage the acidity of the milk kept at room temperature had increased from 2 to 3 times as much as that held at 10–12° C. The initial acidity, or some metabolic product associated with the development of high acidity, plays a considerable part in determining the sustained viability during storage, which decreases at a rate somewhat proportional to the initial acidity. Rogers[6] reported that *S. lacticus* elaborates a chemical substance which is inhibitive to itself and to *L. bulgaricus* as well. The same sort of factor may operate in the case of *L. acidophilus*.

TABLE I

SHOWING INFLUENCE OF VARYING INITIAL ACIDITIES ON VIABILITY AT DIFFERENT TEMPERATURES

Length of Storage	Storage at 12° C.			Storage at 23° C.		
	Count per c.c.	Per Cent Decrease in Count	Acidity in Per Cent	Count per c.c.	Per Cent Decrease in Count	Acidity in Per Cent
Inoculated 24 hrs. before storage						
At beginning	790		0.61	790		0.61
1 day	270	66	0.63	315	60	0.67
2 days	190	75	0.61	470	41	0.68
4 days	150	81	0.62	315	60	0.77
6 days	65	92	0.60	315	60	0.86
9 days	10	98	0.63	80	90	1.08
15 days	10	98	0.63	20	96	1.3
22 days	10	98	0.67	15	97.5	1.4
Inoculated 22 hrs. before storage						
At beginning	450		0.54			
1 day	300	33	0.53	500	none	0.64
2 days	250	44	0.52	285	37	0.67
4 days	200	55	0.54	300	33	0.77
6 days	90	80	0.53	320	30	0.91
9 days	90	80	0.54	220	50	1.26
15 days	80	82	0.60	75	80	1.57
22 days	60	86	0.60	35	95	1.65
30 days	30	94	0.63	6	99	1.65
Inoculated 20 hrs. before storage						
At beginning	280		0.46	280		0.46
1 day	270	3	0.48	400	none	0.60
2 days	185	34	0.48	380	none	0.71
4 days	225	20	0.48	320	none	0.77
6 days	200	28	0.48	250	10	0.96
9 days	125	55	0.52	170	40	1.28
15 days	115	59	0.57	70	60	1.62
22 days	65	77	0.59	40	85	1.74
30 days	40	85	0.63	5	98	1.74
Inoculated 18 hrs. before storage						
At beginning	210		0.44	210		0.44
1 day	280	none	0.42	330	none	0.59
2 days	220	none	0.40	350	none	0.67
4 days	200	5	0.43	700	none	0.80
6 days	170	20	0.43	410	none	0.99
9 days	130	37	0.49	140	35	1.31
15 days	140	35	0.52	50	76	1.68
22 days	150	33	0.59	20	90	1.87
30 days	75	65	0.57	5	97	1.85

EXPERIMENT II

The viability of L. acidophilus in milk cultures of varying initial acidity when stored at 5° C.

Three flasks of sterilized skimmed milk were inoculated with like amounts of *L. acidophilus* milk cultures at different hours during the

TABLE II

SHOWING THE EFFECT OF VARIED INITIAL ACIDITY UPON THE VIABILITY OF L. ACIDOPHILUS AT 50° C.

Time Inoculated.....	8 A.M.			2:30 P.M.			5:30 P.M.		
Length of Storage at 5° C.	Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent
At beginning	700	——	0.9	285	——	0.5	135	——	0.37
2 days	435	40.0	0.9	285	none	0.5	125	7	0.37
8 days	35	95.0	0.9	250	12	0.5	100	26	0.37
13 days	0	99.0	0.9	130	54	0.5	115	15	0.37
17 days	0	99.5	0.9	90	70	0.5	80	40	0.37
30 days	0	99.9	0.9	50	82	0.5	45	65	0.37

day. After incubation at 35° C. until 9:00 A.M. of the following day, the count and the titratable acidity of the milk in each flask were determined. These flasks were then stored at 5° C. Platings and acidity determinations were made at definite intervals during a storage period of 1 month.

It may be concluded from a study of Table II that high acidity or related factors present at the initiation of storage cause a rapid decrease in the number of *L. acidophilus* at 5° C. Conversely, a low acidity enhances the viability of this organism when stored at the same temperature.

TABLE III

SHOWING INFLUENCE OF STORAGE AT DIFFERENT TEMPERATURES ON VIABILITY

Length of Storage	at 11° C.			at 18° C.			at 20° C.			at 23° C.		
	Count per c.c.	Per Cent Decrease in Count	Acidity in Per Cent	Count per c.c.	Per Cent Decrease in Count	Acidity in Per Cent	Count per c.c.	Per Cent Decrease in Count	Acidity in Per Cent	Count per c.c.	Per Cent Decrease in Count	Acidity in Per Cent
At beginning	150		0.63	150		0.63	150		0.63	150		0.63
1 day	150	none	0.60	140	6	0.57	150	none	0.56	90	40	0.60
2 days	110	27	0.56	105	30	0.55	105	30	0.57	70	55	0.60
4 days	105	30	0.56	150	none	0.57	135	10	0.56	90	40	0.72
7 days	65	56	0.58	150	none	0.63	150	none	0.70	30	75	0.90
14 days	50	65	0.55	135	10	0.63	100	33	0.88	30	75	1.00
21 days	40	75	0.59	mouldy		0.63				5	97	1.40

EXPERIMENT III

Influence of different storage temperatures upon the viability of L. acidophilus in milk cultures of the same initial acidity.

Separate portions of a batch of acidophilus milk were stored at

different temperatures for a period of 3 weeks, during which viability and titratable acidity were determined at stated intervals.

The results of Experiment III are not exactly consistent with those of Experiment I, since they show to a slight extent a reverse relationship between storage at 23° C. and at 10–12° C. during the shorter periods of holding. These slight discrepancies can probably be attributed to the considerable inaccuracy in any quantitative method employed for determining living *L. acidophilus*. This experiment again indicates the considerable increase of acidity at 23° C., and shows that storage at 18° C. preserves a high viability of *L. acidophilus*, with no increase in acidity.

EXPERIMENT IV A

The influence of ripening temperatures upon the viability of L. acidophilus in milk cultures during storage.

Six flasks of sterilized milk were warmed to 38° C. Then each received an equal amount of *L. acidophilus* inoculum. Two were incubated at 35° C., 2 at 37° C., and 2 at 40° C. After 20 hours all were removed from the incubator. Viability counts and acidity determinations were made on 1 in each pair; 1 was stored at 5° C. and the other at 20° C. Viability counts and acidity determinations were made at stated intervals during 7 days.

TABLE IV A

SHOWING INFLUENCE OF DIFFERENT RIPENING TEMPERATURES UPON THE VIABILITY OF L. ACIDOPHILUS IN MILK CULTURES DURING STORAGE

Incubation Temperature	Storage Period	Storage at 5° C.			Storage at 20° C.		
		Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent
35° C.	At beginning	315	—	0.63	315	—	0.63
	1 day	305	3	0.63	380	none	0.88
	3 days	190	40	0.64	265	15	1.12
	7 days	190	40	0.64	270	12	1.50
37° C.	At beginning	410	—	0.72	410	—	0.72
	1 day	410	none	0.74	410	none	0.92
	3 days	110	70	0.73	280	30	1.11
	7 days	25	94	0.72	110	73	1.40
40° C.	At beginning	315	—	0.81	315	—	0.81
	1 day	285	9	0.81	210	33	1.00
	3 days	8	98	0.81	180	43	1.08
	7 days	3.5	99	0.81	124	60	1.12

EXPERIMENT IV B

This differed from IVA in that each pair of flasks containing sterilized milk was inoculated at a different hour during the day in order

that the acidity of all the milk after ripening would be practically identical.

The results of Experiment IV indicate that the ripening temperature influences viability of *L. acidophilus* only in so far as increased acidity is concerned, and again demonstrates the weakening effect of high initial acidity or closely related factors upon *L. acidophilus* in storage. The organisms in the high acid milk died off more rapidly at 5° C. than at 20° C. However, the decided increase in acidity in 20° storage is highly undesirable.

TABLE IV B

SHOWING THE INFLUENCE OF DIFFERENT RIPENING TEMPERATURES ON VIABILITY DURING STORAGE AT PRACTICALLY UNIFORM ACIDITIES

Incubation Temperature	Storage Period	Storage at 5° C.			Storage at 20° C.		
		Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent
35° C. Inoculated at 11:30 A.M.	At beginning	355	—	0.73	355	—	0.73
	2 days	330	7	0.75	280	22	0.76
	4 days	280	20	0.77	275	23	0.80
	7 days	270	21	0.79	290	20	0.85
	12 days	190	46	0.79	270	24	1.02
37° C. Inoculated at 2 P.M.	At beginning	370	—	0.75	370	—	0.75
	2 days	360	3	0.79	280	24	0.78
	4 days	295	20	0.74	250	33	0.80
	7 days	235	36	0.76	245	35	0.81
	12 days	175	53	0.77	265	28	0.96
40° C. Inoculated at 5 P.M.	At beginning	360	—	0.77	360	—	0.77
	2 days	360	none	0.77	280	22	0.79
	4 days	275	24	0.79	290	20	0.81
	7 days	270	25	0.79	280	22	0.82
	12 days	160	55	0.80	260	26	0.95

EXPERIMENT V

The influence of butter fat upon viability of L. acidophilus in milk cultures during storage.

Two flasks of skimmed milk, 2 of milk containing 1 per cent butter fat and 2 of milk containing 4 per cent butter fat were inoculated with *L. acidophilus*. After 20 hours' incubation at 35° C., 1 of each pair was stored at 11° C. and the other at 20° C. Viability counts and reactions were determined for each flask at intervals during a storage of 3 weeks.

The results apparently demonstrate that the amount of butter fat has no appreciable effect on the viability of *L. acidophilus*.

TABLE V

SHOWING INFLUENCE OF BUTTER FAT ON VIABILITY DURING STORAGE

L. acidophilus Culture in Skimmed Milk

	Initial Count 320			Initial Reaction 0.60		
	Storage at 11° C.			Storage at 20° C.		
	Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent
2 days	350	none	0.58	430	none	0.73
4 days	220	30	0.58	330	none	0.82
7 days	130	60	0.60	330	none	0.98
9 days	110	70	0.59	180	44	1.09
20 days	25	90	0.59	70	80	1.60

L. acidophilus Culture in 1 Per Cent Butter Fat Milk

	Initial Count 335			Initial Reaction 0.58		
	Storage at 11° C.			Storage at 20° C.		
	Count	Per Cent Decrease	Acidity	Count	Per Cent Decrease	Acidity
2 days	290	13	0.54	360	none	0.72
4 days	275	18	0.54	280	15	0.74
7 days	250	25	0.55	240	27	0.91
9 days	130	60	0.58	240	27	1.00
20 days	30	91	0.61	50	85	1.30

L. acidophilus Culture in 4 Per Cent Butter Fat Milk

	Initial Count 315			Initial Reaction 0.59		
	Storage at 11° C.			Storage at 20° C.		
	Count	Per Cent Decrease	Acidity	Count	Per Cent Decrease	Acidity
2 days	310	1	0.59	340	none	0.72
4 days	310	1	0.61	340	none	0.86
7 days	270	14	0.60	340	none	1.05
9 days	190	40	0.58	250	25	1.10
20 days	70	75	0.61	40	84	1.35

EXPERIMENT VI

The acidophilus milk employed in all experiments reported thus far was prepared in the laboratory from a pure culture.

It appeared desirable to determine the viability of *L. acidophilus* in the commercial product under different storage conditions. Two shipments of acidophilus milk were secured from two producing concerns. These lots were chosen at random at the distributing points and sent to our laboratory. Shipment A was sent by parcel post. It was bottled January 24 and received at our laboratory January 26. The initial count per c.c. was determined January 27, when the con-

TABLE VI A

SHOWING INFLUENCE OF DIFFERENT STORAGE TEMPERATURES ON SAMPLES OF COMMERCIAL ACIDOPHILUS MILK

Storage Period	Storage at room temperature (21°–25° C.)			Storage at 18° C.			Storage in cold room (5°–10° C.)			Storage at 5° C.		
	Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent	Count per c.c.	Per Cent Decrease	Acidity in Per Cent
At beginning	340	—	0.66	340	—	0.66	340	—	0.66	340	—	0.66
1 day	160	53	0.73	200	41	0.66	165	50	0.64	190	44	0.64
3 days	170	50	0.94	200	41	0.68	195	40	0.67	200	41	0.64
6 days	155	54	1.34	190	44	0.77	180	47	0.69	190	44	0.70
14 days	125	63	1.75	160	53	0.86	155	54	0.76	165	50	0.70
21 days	5	98.5	1.85	130	62	0.95	100	70	0.79	75	78	0.68

TABLE VI B

SHOWING INFLUENCE OF STORAGE ON L. ACIDOPHILUS AND ON BACTERIAL CONTAMINANTS

Storage Period	L. acidophilus per c.c.	Per Cent Decrease	Contaminants 20° C. Incubation	Acidity in Per Cent
Storage at room temperature (21°–24° C.)				
At beginning	500	—	none	.68
2 days	255	50	800	.81
4 days	240	52	30,000	.90
6 days	250	50	50,000	1.28
12 days	95	80	10,000,000	1.38
Storage at 18° C.				
2 days	200	60	600	0.72
4 days	250	50	8,000	0.76
6 days	275	45	143,000	0.81
12 days	110	80	10,000	0.82
Storage at 6°-10° C.				
2 days	165	67	0	0.69
4 days	185	63	0	0.72
6 days	170	66	0	0.76
12 days	30	94	400,000	0.80
Storage at 5° C.				
2 days	280	44	0	0.68
4 days	215	57	0	0.68
6 days	120	76	0	0.69
12 days	10	98	12,000	0.68

NOTE: In this table the *L. acidophilus* count is given in millions as in all other tables. The count of contaminants is the actual numbers per c.c.

trolled storage was begun. It was, therefore, 3 days old at this time.

Shipment B was delivered to us by express and was well iced during transit. This was 2 days old when the controlled storage experi-

ment began. The effect of storage temperatures on contaminating forms in B was determined.

Experiment VI is a practical demonstration of the effect of different storage temperatures upon the viability of *L. acidophilus* in commercial acidophilus milk.

At the completion of the storage period there was no apparent change in the flavor, acidity, etc., of the samples kept at 5° C. and 8° C. Samples of "A" stored at 20° C. and at 25°–27° C. did not have any "off" flavor or taste, but were too sour to be palatable. The taste of "B" kept at these same temperatures was decidedly "off" in addition to an excessive acidity. The large numbers of foreign bacteria developing at these higher temperatures were without doubt responsible for the "off" flavor.

DISCUSSION

Close inspection of the results reported in this paper should reveal several points of practical significance to those who are interested in the production and use of acidophilus milk.

The first and probably most important conclusion is that the maximum viability of *L. acidophilus* manifests itself in the freshly prepared product, with a fairly rapid decrease within any storage period. However, if we accept a required minimum of 100 or even 200 millions of viable organisms at the time of consumption, it should be stated in fairness to producers of high grade acidophilus milk, that reasonably satisfactory viability can be maintained for 2 or even 3 weeks without serious harm to the product. The maintenance of this standard for such periods requires strict adherence to certain rules governing proper preparation and storage.

From a strictly scientific standpoint, the observations of Kopeloff and Berman regarding viability of *L. acidophilus* during short storage periods are in a measure correct. However, only in rare instances during our experiments have the numbers of living *L. acidophilus* decreased after 3 days' storage to the extent reported by these investigators. From a practical viewpoint their recommendation for storage at room temperature is unwarranted and unnecessary, and if carried out would probably do the commercial product more harm than good.

The term "room temperature" is too variable in interpretation. So-called "room temperatures" range ordinarily from 18° C. to 30° C. It is quite probable that the continued high viability of *L. acidophilus* at "room temperature" is not a question of maintenance of the original organisms but is due to continued multiplication. The rate of this increase is dependent upon the temperature increment above 20° C.

The metabolism of *L. acidophilus* at temperatures above 21° C. is sufficient to cause an actual increase in numbers up to a maximum, but at the expense of the palatability due to an excessive increase in acidity. Over comparatively long storage periods at any temperature this increased acidity or the development of other metabolic products is markedly detrimental to viability. In addition, storage at room temperature may bring about the rapid development of contaminants, with resultant lowering of the efficacy and palatability of the product.

CONCLUSIONS

From the standpoint of palatability of *L. acidophilus* milk, the continued life of *L. acidophilus* in storage seemed to depend upon two factors—initial acidity or some related metabolic substance, and storage temperature, assuming that there is a minimum of contaminating growth. In order to insure satisfactory viability for 2 days to 1 week, commercial acidophilus milk of good quality may be stored at 5° C., provided the acidity at the time of bottling is not more than 0.65 per cent.

When the producer of acidophilus milk desires a satisfactory viability of *L. acidophilus* for more than 1 week, the following rules must be closely followed:

The number of foreign bacteria must always remain at a negligible figure.

Rigid precaution against excessive acidity must be observed.

The storage temperature should range between 12° C. and 16° C., the optimum viability temperature for *L. acidophilus* in milk being 16° C. when the initial acidity is 0.65 per cent.

REFERENCES

1. Kopeloff, N., and Berman, Philip. Some Temperature Studies on *B. acidophilus* Milk, *State Hosp. Quart.*, May, 1923.
2. Kulp, W. L. The Determination of Viable *L. acidophilus*, *Science*, 64, 304–306, 1926.
3. Kulp, W. L. An Agar Medium for Plating *L. acidophilus* and *L. bulgaricus*, *Science*, 66, 512–513, 1927.
4. Rettger, L. F., and Horton, G. D. A Comparative Study of the Intestinal Flora of White Rats Kept on Experimental and Ordinary Mixed Diets, *Centralbl. f. Bakteriol.*, 73, 362–372, 1914.
5. Rogers, L. A. The Inhibiting Effect of *Streptococcus lactis* on *Lactobacillus bulgaricus*, *J. Bact.*, 16, 321–325, 1928.

Diphtheria Immunization by Three and Four Injections of Toxin-Antitoxin

Comparative Trend of the Immunizing Process

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THE impression which has prevailed that 3 injections of diphtheria toxin-antitoxin are sufficient in a very large majority of cases to produce immunity in the course of a year or less has not been corroborated by our work in Oakland County rural schools.

The results of the immunization of over 8,000 children in the past 4 years were disappointing inasmuch as only 65 per cent of those given 3 injections became immune at the end of the first year.

Not being entirely satisfied with the results shown at the end of the first year by the use of 3 injections of toxin-antitoxin, we began the use of 4 injections in 1928 with the hope of obtaining more satisfactory results. A study was made to determine to what extent the trend of the immunizing process differs in two groups of children who received 3 and 4 injections of toxin-antitoxin: (1) at the end of the first year, and (2) at the end of the second year.

Four intramuscular injections of 1 c.c. of toxin-antitoxin were given to 946 rural children comprising a typically American group. Those children who for various reasons failed to receive the 4th injection comprised the other group of 336 children receiving 3 injections of toxin-antitoxin.

No preliminary Schick test was given because of the known high percentage of susceptibles. On other occasions when large groups of rural children were Schick tested about 94 per cent were found Schick positive. Toxin-antitoxin and diphtheria toxin for Schick test were furnished at all times by the Michigan Department of Health. The Schick test which was given 1 year following toxin-antitoxin was read by the writer throughout to insure uniformity of interpretation. The Schick test was read 1 week later than the injection to eliminate as far as possible the pseudo reactions.

Although we were aware of the fact that pseudo reactions occasionally last for more than 7 days, no controls were used. However,

the possibility of misinterpretation, though small, would exist to a similar degree in both groups and therefore would not affect the correct evaluation of the trend of the immunizing process.

The results of immunization by 4 injections of toxin-antitoxin as well as the comparison with results obtained by 3 injections are shown in detail in Figure I.

TABULATIONS OF RESULTS OF IMMUNIZATION BY THREE AND FOUR INJECTIONS OF TOXIN ANTITOXIN

		Number of Injections			
		3		4	
Age Group	Children	+	-	+	-
4-5-6	Number	39	65	52	175
	%	37.5	62.5	22.4	77.6
7-8-9	Number	28	69	92	253
	%	29	71	26.5	73.5
10-11-12	Number	36	60	65	193
	%	37.5	62.5	25	75
13 and Over	Number	16	23	38	76
	%	40	60	33.3	66.7
Total	Number	119	217	247	699
	%	35.4	64.6	26	74

FIGURE I

It will be noted that while 35.4 per cent of those who received 3 injections were still susceptible at the end of the year only 26 per cent of those who received 4 injections were susceptible at the end of the same period of time.

Careful follow-up work was done on 114 cases that received 3 injections of toxin-antitoxin in 1928 and which were found to be Schick positive 1 year after the administration of toxin-antitoxin. This group was Schicked again a year later, in 1930, and the results thus obtained reveal that 48 children, or only 42 per cent, remained positive at the end of the second year.

In the group of 946 children who received 4 injections of toxin-antitoxin in 1928, 247 were positive 1 year later; of this group 131 were carefully studied. At the end of the second year when this group of 131 was re-Schicked, 42 children, or only 32 per cent, remained positive.

Comparison of the results obtained at the end of 24 months in both groups comprising 245 Schick positive children indicates that 4 injections of toxin-antitoxin promote the development of immunity at the end of the second year to a greater degree than do 3 injections; of the Schick positive group which received 3 injections of toxin-antitoxin, 58 per cent changed to negative; while of the Schick positive children of a similar age group who received 4 injections of toxin-antitoxin 68 per cent changed to negative.

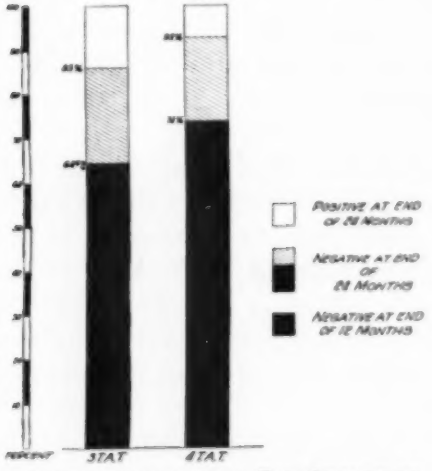
In the Schick test we have a definite means of determining susceptibility to diphtheria at the time the test is given. However, the susceptibility to diphtheria is lessened as time goes on and to a greater degree, in those who received toxin-antitoxin, with the ultimate result that immunity is built up, as shown in Figure II, from 64.6 per cent at the end of the first year to about 85 per cent at the end of the second year in those who received 3 injections of toxin-antitoxin, from 74 per

cent at the end of the first year to about 92 per cent at the end of the second year in those who received 4 injections of toxin-antitoxin.

It would appear that toxin-antitoxin is the most active factor in the progressive trend of the development of immunity since both groups could be equally affected by other contributory factors to immunity such as the natural development of immunity as age increases and the less important factor of mingling with unrecognized cases of diphtheria or diphtheria carriers.

In the practice followed by the great majority of health officers of giving the Schick test 6 months to a year after toxin-antitoxin, with the additional administration of toxin-antitoxin should the Schick test be found positive, an important factor is disregarded or at least not emphasized; the result of immunization is not final during the first 6 months or a year. Failure to consider this factor has resulted in a lowered estimate of the number of cases which ultimately become immune and has often led to the unnecessary administration of an additional series of toxin-antitoxin.

Inasmuch as it is probable that, because of the progressive trend of immunity, the Schick reaction will ultimately change to negative by the end of the second year in a large percentage of cases, it appears premature to give the Schick test at the end of the first year. On the other hand, it is obviously a difficult matter to give the Schick test 2 years after the administration of toxin-antitoxin because of the shifting school and preschool population.



STATUS OF IMMUNITY IN TWO GROUPS OF CHILDREN AT THE END OF 12 AND 24 MONTHS AFTER 3 AND 4 INJECTIONS OF T.A.T

FIGURE II

What possible disadvantages may be encountered in omitting the Schick test? A survey concerning the re-Schicking practice in 104 cities made by Armstrong and Walker indicates that, even with the present routine, less than 35 per cent of children receiving toxin-antitoxin are subsequently Schick tested. Parents are advised that the child, after receiving toxin-antitoxin, will probably be protected against diphtheria, but because of the possibility that he might not be, they should consult the family physician should there be any evidence of sore throat. This point of view is in accord with

Park, who, in his book, *Public Health and Hygiene,* in discussing what should be done with a child who has received toxin-antitoxin or who has been shown to be immune by a negative Schick test, states:

> If the child should develop a suspicious sore throat, it should then receive antitoxin even though the probability of the condition being diphtheria is very slight. There is no serious objection to giving the child an unnecessary dose of antitoxin, and it is known that serious harm may ensue if the child develops diphtheria and an early dose of antitoxin is not given, since we know there are slips with the Schick test.

An additional reason why this procedure should be carried out faithfully is the fact that Park, Parish, Okel and others have observed that the dictum "Once Schick negative always Schick negative" is an assertion subject to exceptions and that between 3 and 5 per cent of children previously Schick negative were found to be Schick positive upon re-testing.

Park, Scamman, Gordon, Schwalbe and others relate authentic cases of clinical diphtheria in persons previously Schick negative. This may be accounted for by the fact that the average amount of antitoxin in the system which is responsible for Schick negative reactions might have lessened since the test was done or occasionally be insufficient to withstand an unusually severe infection.

Factors such as smallpox vaccination (observation by Finkelstein) or an attack of scarlet fever (observation by Hull), are also apt, in their opinion, to change the Schick test temporarily at least from negative to positive by temporarily decreasing the diphtheria antitoxin in the body.

Kellogg's observations led him to the conclusion that the Schick test should be abandoned for routine use for a number of reasons, among them being the possibility of error in interpretation because of protein sensitization, local differences in the immunity of the tissue, etc.

The possibility of these occurrences though extremely rare should not be overlooked.

A study made by Gordon of 1,500 cases admitted to Herman Kiefer Hospital reveals that only 14.7 per cent gave history of having received toxin-antitoxin. The ratio of population of the groups receiving toxin-antitoxin and not receiving toxin-antitoxin indicates that a little over 50 per cent of school and preschool children in Detroit received toxin-antitoxin. Thus for each 6 or 7 cases of diphtheria which occurred in the unprotected group, there was but 1 case of diphtheria in the group that received toxin-antitoxin. The study is not complete, but information available as to how long toxin-antitoxin had been

given before diphtheria developed indicates that over 40 per cent of those having diphtheria received toxin-antitoxin less than 6 months previously.

A careful follow-up of the group termed "immunized" will probably reveal, according to Detroit health authorities, that many who gave a history of toxin-antitoxin had received some other injections instead; thus the presumably immunized group would be materially decreased. The reduction of diphtheria mortality in the group that previously received toxin-antitoxin is also quite impressive since it is only one-third of the prevailing mortality rate among those who did not receive toxin-antitoxin.

The study of Scamman and Pope on "Diphtheria Immunization of 15,000 Children in Providence" strikingly reveals that the incidence of diphtheria among the children who received 3 injections of toxin-antitoxin is 10 times less than that among the similar group of children that did not have toxin-antitoxin. It is reasonable to expect even better results with 4 injections of toxin-antitoxin.

The omission of the Schick test as a routine procedure is indirectly in accord with the present trend of encouraging the private practitioner to assume the responsibility of immunization. When the work of immunization is finally delegated to the family physician, to whom it rightfully belongs, he would be relieved of the necessity of making a delicate test and would be encouraged to urge toxin-antitoxin since there would be no necessity for following it up. The faith of parents in toxin-antitoxin would be enhanced since it would become common knowledge that 4 injections are all that is necessary in a large majority of cases.

The practice of omitting the Schick test altogether has been used with success in some communities. It seems justifiable under normal conditions, except perhaps among school children in large cities, to omit the Schick test because the health officer would thus be enabled to enlarge the group of protected children.

Under normal conditions the health officer is concerned with the community status of immunity and his efforts should be directed toward decreasing susceptibility to diphtheria in the community because it is well known that in spite of the most efficient epidemiological measures and practices, the majority of cases cannot be traced to a definite source of infection. This is shown by Benning in his study of 500 consecutive cases of diphtheria in Baltimore of which 77.6 per cent could not be traced to any definite source.

It should not, however, be implied that the Schick test should be omitted in times of unusual prevalence of diphtheria in a community

or institution where conditions are favorable for the spread of the disease, where it is necessary to know the exact status of immunity at all times, or for preliminary testing. It would, of course, remain an indispensable factor in research work.

SUMMARY

Studies to ascertain the development of immunity against diphtheria were carried on among 1,282 children. Group one, 336 children, received 3 injections of toxin-antitoxin and showed immunity after the first year in 64.4 per cent and after the second year in about 85 per cent. Group two, 946 children, received 4 injections of toxin-antitoxin and showed immunity after the first year in 74 per cent and after the second year in 92 per cent.

Four injections of toxin-antitoxin do not produce any more untoward reaction than 3 and are not impractical either in private practice or as a public health procedure in schools.

The use of 4 injections appears to be a preferable method of toxin-antitoxin administration until diphtheria toxoid has been sufficiently tested to justify its use in either preschool children alone or in all groups and ages.

The Schick test need not be given as a routine procedure at the end of the first year, if at all, after administration of 4 injections of toxin-antitoxin.

Simplifying the procedure by the omission of the final Schick test would encourage the private physician to undertake the work of immunization. The time saved by the omission of the final Schick test would enable the health officer to reach a larger group of unprotected children.

The Schick test would, of course, remain an indispensable test in research work, preliminary testing, in times of unusual prevalence of diphtheria in communities or institutions where conditions are favorable for the spread of the disease, or where it is necessary to know the exact status of immunity at all times.

These observations, though based on too small a group of children to justify drawing final conclusions, indicate a definite trend in the progress of the immunizing process after the first year to a much greater extent than has been commonly assumed and it is earnestly hoped that others will be stimulated to carry on similar studies.

BIBLIOGRAPHY

Park, W. H. *Public Health and Hygiene*, 1928.

Rosenau, M. J. *Preventive Medicine and Hygiene*, 1927.

Sears, F. W. Further Observations on the Schick and Toxin-antitoxin Immunization against Diphtheria in the City of Auburn, *A. J. P. H.*, 14, 3: 210 (Mar.), 1924.

Kellogg, W. H. Should the Schick Test be Abandoned?, *A. J. P. H.*, 15, 10: 868 (Oct.), 1925.

(*Cont. on p. 890*)

Stokes, Hogan and Ewing. Does Intensive Work on Carriers Decrease Diphtheria?, *A. J. P. H.*, 15, 10: 871 (Oct.), 1925.

Scamman, C. L., and Pope, A. S. Diphtheria Immunization in Providence, *J. A. M. A.*, 88: 563–565 (Feb. 19), 1927.

A Review from German Publications on The Value of Protective Inoculation against Diphtheria, *J. A. M. A.*, 90: 558–560 (Feb. 18), 1928.

Finkelstein. Abstract—Schick Reaction and Cow-pox Vaccination, *J. A. M. A.*, Apr. 21, 1928.

Parish, H. O., and Okel, C. C. Permanence of Schick Negative State, *Lancet*, Aug. 18, 1928, pp. 322–323.

Hull, T. G. Schick Test and Scarlet Fever, *J. Lab. & Clin. Med.*, Dec., 1925, pp. 260–261.

Benning, C. H. A Study of the Probable Mode of Infection in 500 Cases of Diphtheria. Not yet published.

Gordon, J. E. Study of 1,500 Diphtheria Admissions to Herman Kiefer Hospital. Article not yet published.

Drought Area

DURING the fiscal year beginning July 1, 1931, we shall have available for cooperative work in the drought-stricken area approximately $1,500,000, or such part thereof as may be necessary. For the counties not included in this area there will be available the regular rural sanitation appropriation of $338,000. Estimates and budgets for proposed projects under each of these appropriations were requested early in May, for the coming fiscal year, and those approved will become effective July 1, 1931. The possible total, therefore, which the public health may have invested in coöperative county health work during the year July 1, 1931, to June 30, 1932, is approximately $1,838,000.

* * * * * * *

As regards the consultation and advisory service there can be no doubt of the value of professional advice and assistance to communities and states by competent experts in the several phases of public health. Such service is now being organized on a modest scale in connection with the drought relief work, and its value and possibilities will be readily apparent to those of you to whom it is possible to extend it.—Assistant Surgeon General W. F. Draper, *United States Daily*, May 9, 1931.

What Social Work Is Not

ELEANOR E. KELLY

Supervisor of Social Service, State Department of Public Health, Boston, Mass.

SOCIAL work has been called many things. Here are seven things to remember that social work is not:

1. Social work does not signify social secretarial work; nor is it to be construed as in any sense related to the activities of the so-called society world. Social workers are recruited from all walks of life and their profession is not limited in scope of service to any particular class or creed.

2. There is a misconception of social work as the doling out of material relief by a "Lady Bountiful."

Of course, there always has been and always will be in the world a place for the individual who, from his plenty, is ready to give to those who are in need. Without this spirit the world would be a sorry place indeed, and professional social workers would be at a loss to find the funds for necessary relief. It is not, therefore, this spirit of giving with which we quarrel, nor do we want to belittle the value of the gifts or the sincerity of purpose. It is necessary, however, to explain that relief giving is not the sole function of the social worker. Money is, naturally, one of the tools with which she works but it is not given or withheld according to the fullness or emptiness of the exchequer—or merely on an impulse.

The professional social worker is trained in the scientific method of handling her problems. For instance, a man asks for the price of a meal for which he honestly cannot pay. The social worker immediately says to herself: "Why is this man in need? How much better off will he be if I give him money for one meal? What can I do to be of real help to him?" The man may be ill or out of work. It would be easy to give what he asks and dismiss the matter. But how much more effectively she can help if she understands his real need! If she learns that he is out of work, she endeavors to help him in his search for a job.

If he is physically unable to work, she will first arrange for him to secure medical treatment. Later she will put him in touch with employment bureaus or help him to make whatever other adjustment may be indicated in order that he can carry on for himself. This of

necessity requires time, and the man must be given aid until he is able to stand on his own feet. It is a decidedly better investment for the social worker to spend time helping him to work out his own problem than to encourage him to go from one individual to another seeking help which will suffice only for the moment.

If he is a professional tramp, he will not respond to social treatment by the scientific method. The self respecting individual, however, who is down on his luck through misfortune, weakness, or ill health, welcomes the chance to do his part and will often redouble his own efforts when he feels that some one is trying to help in an understanding way.

3. I want to stress the fact that the social worker is not a meddler, making unnecessary inquiries merely out of curiosity, or a desire to prove the individual or family unworthy of aid. She investigates in order to determine the need and formulate an intelligent plan whereby she can meet that need.

The business man satisfies himself as far as possible that a contemplated investment is a sound business proposition. The social worker invests time and energy in working out a social problem. She must have reasonable expectation of satisfactory returns in the social adjustment she seeks. Besides, she is responsible for her expenditure of time and money to the public, to whom an injustice is done if she does not use them wisely.

Frequently the social worker is called upon to help in some home adjustment. It is difficult enough to advise and assist a family when all the facts are at hand. To try to do so without a knowledge of the true family situation may lead to a wholly inadequate or unfair solution, such as the placing of too great a burden upon an individual, or an unjust shifting of responsibility to the community.

Again, in making plans for the child who has no family, it is of vital importance both to the child and to the foster parents that the personnel, the environment, and the moral and physical aspects of the home be suitable. It is unfair, for instance, to place a child in a home in which his moral or physical welfare is not assured. It is just as unfair to the parents to admit to their home a child who may be a physical or moral menace to their own children. Careful investigation is necessary for the protection of the family and the needy child.

In every form of social work, it is essential that the worker shall learn what the need is, what has caused the need, and what resources she can call upon besides her own skill and ingenuity. All her efforts are based on a desire to be of service, and to meet the need with the

most effective, constructive plan possible. There are, of course, blunderers in social work as there are in all fields of endeavor, but fortunately they are not representative of the group.

4. There is a special type of social service, medical social work. This is not identical with nursing, although these fields are very closely allied. The medical social worker does not concern herself directly with the physical care of the patient. The basis of her work is the medical need of the patient, but the service she renders is social treatment.

She brings to the attention of the doctor significant data regarding the patient's environment, family and responsibilities—information which aids the doctor in making a diagnosis or recommending treatment. Then she helps the patient to carry through the plan of treatment ordered by the doctor. The social worker first ascertains whether it is possible for the patient to follow the doctor's directions, for hospitalization, treatment or rest, or hygienic living. If not, she must try to remove whatever obstacles there may be. It is futile, for example, for the doctor to advise a long rest for a man who must support his family and cannot give up his job. Unless some help can be given him, he will not have the necessary medical attention and before long will be physically unfit for work. It is the responsibility of the social worker to help him in making a temporary plan for his family so that he can have the necessary rest.

Sometimes the social worker will need to explain a patient's condition to the family and secure their help in placing him under treatment. Often she helps the patient to understand the medical plan. The problems presented to the medical social worker are many and varied, but always she must consider the individual patient with his medical problem in his relationship to his family and the community. Whether the social worker is found in the hospital, clinic, or health department, she strives to help the sick individual to make such adjustments as will speed his return to health, and the well person to live in such a way that his health will be protected.

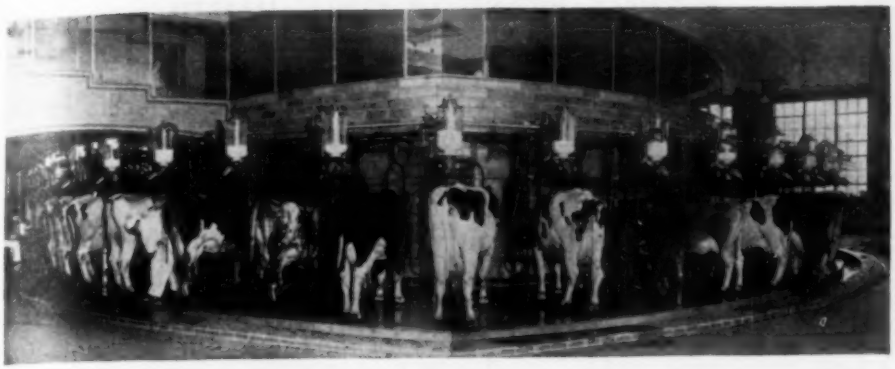
5. The social worker has no panacea. When a problem is presented to her, she uses every known resource in her effort to solve it, but she does not always realize her hopes for the individual or group in need. She does not work alone. Health agencies, relief agencies, settlements, churches, and many other organizations rendering specialized services may be called upon to advise and assist her. Without this team play, constructive accomplishment would be difficult. Even with her best efforts, however, it is not always possible to stimulate in an individual that which will enable him to win out for himself.

6. Again, the efforts of social workers are not limited to case work. Through service to the individual and the group, they become cognizant of existing unsatisfactory social conditions and bring these before the public for remedy. Some of our soundest legislation has been the outgrowth of such service.

7. Social work is not and never can be divorced from spirituality. The very foundations of social service rest upon man's need for expressing his religion. In service to his fellowmen, he satisfies in a small measure this need. Sometimes the motive seems to be lost sight of in the necessity for practical methods but underlying there is the fundamental element of spirituality.

Social work has been described as "any form of persistent and deliberate effort to improve living or working conditions in the community, or to relieve, diminish or prevent distress, whether due to weakness of character, or to pressure of external circumstances. All such efforts may be conceived as falling under the heads of charity, education or justice, and the same action may sometimes appear as one or another according to the point of view."

Laval University (French College), Montreal



Hygienic and Sanitary Features of Milk Production by the Rotolactor Process

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The Walker Gordon Laboratory Company, Plainsboro, N. J.

MENTION was made in the December, 1930, issue of the *Journal* (p. 1389) of a new system of producing milk by means of the "Rotolactor," developed and used by the Walker-Gordon Laboratories, Plainsboro, N. J. Since this system embodies several features which contribute unusual sanitary safeguards to the production of clean milk, the following survey of the process is of interest to health officers and other readers.

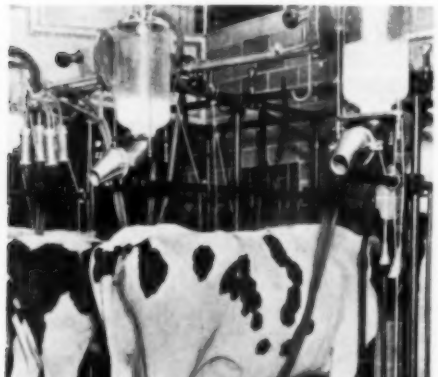
The rotolactor, as shown in the illustrations, is a rotary milking unit or slow motion merry-go-round—a circular platform on which cows are washed and milked at the rate of 240 an hour. The cows step on and off the moving platform at the rate of one every 15 seconds, but there is an intervening ride of 12½ minutes during which the cleaning, foremilking and milking operations are carried on. The operation is continuous until all the cows have been milked.

The motives actuating the development of the rotolactor were the desire to make possible the volume production of clean milk under the most advanced conditions of hygiene and sanitation, and to demonstrate such a system to the end that it might lead to the development of better milk supplies on a wide scale.

In operation the cows move from their living quarters into a separate building and a room devoted only to milking. This room is especially equipped and designed with one principal objective—cleanliness. Walls and floors are tiled and kept clean. The air in the building is filtered and washed so that atmospheric conditions are nearly ideal; there is a complete absence of dust and objectionable odors. There

can be no doubt of the desirability of such a milking room compared to the compromise conditions which confront milk producers in the usual cow stable where there is a continual struggle between factors of stable hygiene, milk hygiene and cow comfort.

The rotolactor provides special means for washing the cows. Except in a few sections of the country where climatic conditions require that cows be stabled only at milking time (and even in these sections only rarely), has it been possible or customary to employ effective quantities of water in preparing cows for milking. On the rotolactor, the cows are subjected to a series of warm spray washes and showers directed particularly against the posterior quarters and udder. These automatic showers are augmented by 2 men with hand hoses, supplying warm water under considerable pressure, who devote their attention to the cleansing of udders and flanks. This is followed by drying of the teats and udders with clean individual towels. Such operations insure the almost complete elimination of foreign materials that might gain entrance to the milk.



Milk goes from the cow's udder to the pyrex glass without being exposed to the air and without any possibility of contamination.

An important advance has been made in the care given the milking machines. There is an individual machine for each stall of the rotolactor. During the time that the cows are being prepared for milking, the machines are subjected to thorough automatic rinsing and hot water sterilization. Every part of the apparatus to which the milk is exposed receives cleaning and scalding baths as soon as the milk of one cow is discharged from it, giving a clean and practically sterile milking unit, from teat cups to pyrex glass jar, for each cow. Such care of utensils has never before been accomplished and is believed to answer criticisms previously made of the production of high grade milk with machines. The pyrex glass jar also permits inspection of the milk as it comes from the cow and so furnishes an additional check on its quality.

The arrangements for collecting and handling the milk after it leaves the glass jars are such that there is only a momentary exposure

to the atmosphere. The milk is discharged into previously cleaned and sterilized tanks from which it is pumped through sterilized sanitary lines to the coolers, into glass lined mixing tanks, and thence to the automatic bottling and capping machines. Within little more than a minute from the time it leaves the cow, the milk has been cooled, and is maintained at a low temperature until delivered.

With respect to the spread of disease in man through milk, the human element constitutes one of the most important as well as one of the weakest factors. With the rotolactor, human contact even of a remote character is reduced to a minimum. Thus, in milking cows at the rate of 240 an hour, there are only 4 men who are possible contacts: a foremilker, 2 men who attach teat-cups (but who touch the teats scarcely at all), and the attendant of the bottling machine. With these men under effective medical supervision, as well as all others who are even remotely associated with milk production, the possible dangers due to human contacts are as nearly eliminated as is possible, a trend which is now foremost in the preparation of all quality food products.

The production of high grade milk on the volume basis which justifies the construction of such units as the rotolactor makes possible a centralization of control and effective supervision at the source which is not economically feasible with the small scattered units that characterize our present milk supplies.

The construction of the rotolactor building with its visitors' gallery behind glass partitions is such that there can be unlimited observation and study of all milking procedures without the objections which attend the passage of visitors and others through the usual milking stables. With such a machine, backed up by healthy cows and healthy employees, the milk is provided with real protection against the entrance of extraneous bacteria or foreign matter. The degree of purity attained amply justifies the pains taken to accomplish it.

EDITORIAL SECTION

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MONTREAL

SOMETHING of the history of Montreal is given in July issue of the JOURNAL, a story full of romance, showing the vision, courage and persistence of the pioneers who founded the city. From the medical and public health standpoint, a full chapter could be written. Without disparagement to the many eminent professional men whose names are associated with its institutions, we may mention two who stood preëminent, William Osler and Wyatt Johnston.

Born in Canada, and always having retained his allegiance to that country and England, Dr. Osler spent much of his professional life in the United States, and while he was first of all a student and teacher of internal medicine, his interests were wide. He was one of the founders of the National Tuberculosis Association. Two years after his graduation from the Toronto Medical School in 1868, he began the work which made him famous in the Montreal General Hospital. In 1872 he was offered the chair of Botany at McGill University, in 1874 became Lecturer in the Institutes of Medicine, and was made Professor of Medicine in 1875. All know of the brilliant record he made. In 1884, he accepted a call to the University of Pennsylvania, leaving there for Baltimore when Johns Hopkins was founded, where he remained until made regius professor at Oxford, England.

The story of Wyatt Johnston is more closely connected with our association, of which he was a member from 1892 until his death, June

19, 1902. His untimely death was a blow to science as well as to our organization. He introduced the Widal Test into America. At our meeting in Buffalo, 1896, he read a paper entitled: "On the Application of the Serum Diagnosis of Typhoid Fever to the Requirements of Public Health Laboratories." Some 27 specimens of blood were sent without histories from Montreal to him at the meeting, and the correct diagnosis made in each case. Following this paper and demonstration, the application of the test rapidly spread over the continent until it became a standard procedure.

Members of our Association will find much of interest in the beautiful city which is to be our host, and we can do nothing better while there than to lay a wreath on the grave of Wyatt Johnston in Mount Royal Cemetery.

SCURVY AND ITS PREVENTION

IN spite of the fact that scurvy was described in 1250,[1] when the first clear accounts of it were given, again in the 15th century when long sea voyages became more frequent, and later in the especially clear account given of the voyage of Vasco di Gama, 1498, during which 55 sailors died, there still seems to be much lack of recognition of the facts, especially those concerning its prevention and cure.

Many writers attribute the discovery of its cause and cure to Capt. Cook, who during his three voyages was very successful in preventing the disease. Such articles as that by Captain Angus[2] have brought the misunderstanding down to very recent times. This author says, "It was left to the son of a farm labourer, born in 1728, . . . to prove during his three long voyages of exploration how this pest could be completely vanquished." As regards Captain Cook, there seems to be no doubt that before the "Endeavour" sailed, August 26, 1768, the Lord of the Admiralty wrote to him (then Lieutenant) that Dr. David MacBride (1727–1778) in *Experimental Essays on the Scurvy and Other Subjects,* and *An Historical Account of the New Method of Treating the Scurvy at Sea,* had pointed out the means of preventing this scourge. "Fit Experiments" during the voyage according to these methods were ordered, and the Commissioners of the Victualling were directed to put on board the ship a quantity of the antiscorbutics. The Surgeon was to keep an exact journal "describing the several symptoms and relating the progress and effects from time to time, 'which journal is to be transmitted to us at the end of the voyage.'"[3] The lists of foods supplied are extant, in addition to which it is well known that Capt. Cook added wild celery and other wild herbs whenever he was able to collect them. He paid especial attention to per-

sonal cleanliness, the avoidance of wet clothing, and clean quarters, and gave untiring supervision to the health of his men. It seems, then, that credit must be given to Capt. Cook for having been the first to put into effect such measures. He undoubtedly showed, in spite of his lack of education, remarkable judgment, and there is no desire to contradict the accepted fact that his success was due largely to his personal actions. Other voyagers had had antiscorbutics on their ships, yet scurvy occurred. There seems to be just as little doubt that to Dr. David MacBride the suggestions of the causes of scurvy and, as far as Captain Cook is concerned, its prevention were due.

About the same time a number of other English physicians wrote on scurvy, prominent among whom are James Lind (1736–1794) and Thomas Trotter (1785), the latter of whom wrote a "Medicina nautica" or a general treatise on the diseases of seamen. However, earlier, John Woodall,[3] born about 1569, was made Surgeon General to the East India Company in 1612, and about this time wrote "The Surgeon's Mate." While a surgeon by profession, and having served as a military surgeon in 1589 to the troops sent by Elizabeth to the aid of Henry IV of France, he wrote also a "Treatise on the Plague," and another on "Gangrene and Sphacelus," all of which were collected into one volume and published in 1639. As far as the present discussion is concerned, his most valuable work was on "the scurvy" in which he described the disease and methods of cure. It is true that he made some mistakes, but he asserted that its principal cause was the long use of salt provisions, coupled with a want of cleanliness and proper change of apparel. He further gave first place in its prevention and treatment to the juice of lemons, but recommended various other acid vegetable juices and fruits. In 1720, Kramer, "Medicina Castrensis," spoke positively of the curative properties of green vegetables, oranges, lemons, and citrons, and told how to preserve the pulp of the citrous fruits for prolonged use.

Writing in 1780, John Aiken[4] refers to "the very ingenious Dr. MacBride," and states that he particularly commended the treatise of Dr. Woodall and quoted from it. He further expressed his surprise that few of the writers of the time had mentioned him or his work.

". . . I hold strongly with the statement that it is a sign of a dry age when the great men of the past are held in light esteem."

REFERENCES

1. Bass, John Hermann, M.D. *Outlines of History of Medicine and the Medical Profession*, 1889.
2. *Brit. M. J.*, Dec. 31, 1927.
3. Purdy, J. S. *Med. Off.*, Dec. 22, 1928.
4. Aiken, John, Surgeon. *Biographical Memoirs of Medicine in Great Britain*, 1780.

Upper—St. James Cathedral (Roman Catholic), an exact reproduction of St. Peter's in Rome, one-quarter the dimensions.

Lower—Arts Building of McGill University. The founder, James McGill, is buried under a small monument before the portico. A Royal Charter conferring University powers was obtained in 1821. McGill is one of the foremost seats of learning in North America.

PRELIMINARY PROGRAM OF THE SIXTIETH ANNUAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

Montreal, Quebec, September 14–17, 1931

THE Annual Meeting Program Committee presents herewith the preliminary program of the scientific sessions of the American Public Health Association and information concerning meetings of related organizations held in connection with the Sixtieth Annual Meeting.

Scientific trips are announced elsewhere in this *Journal*. Entertainment plans, always important features of the Annual Meeting, are not listed at this time. The next issue of the *Journal* will provide details about them.

The 3-day post-convention trip to Quebec and the Saguenay River has been announced to members in correspondence and will be referred to again in a later *Journal*.

Since the following program cannot be considered definite in every respect now, delegates are urged to consult the final program, available at the Registration Desk in the Windsor Hotel at the time of the meeting. Exact hours and places will be announced therein.

General Sessions

First Session—Monday Evening

Invocation. Mgr. Georges Gauthier, Archbishop Coadjutor of Montreal and Chancellor of the University of Montreal.

Rt. Reverend J. C. Farthing, Anglican Bishop of Montreal.

Addresses of Welcome.

S. Boucher, M.D., D.P.H., Director, Department of Health, and Chairman of the Local Committee, Montreal, Que.

His Worship Camillien Houde, Mayor of Montreal.

Honorable Athanase David, Provincial Secretary, Quebec, Que.

Honorable Murray MacLaren, Minister of Pensions and National Health, Ottawa, Ont.

E. W. Beatty, LL.D., Chancellor, McGill University, Montreal, Que.

John A. Amyot, M.D., Deputy Minister of Health, Ottawa, Ont.

Alphonse Lessard, M.D., Director, Provincial Bureau of Health, Quebec, Que.

Address of the President of the American Public Health Association. Hugh S. Cumming, M.D., Surgeon-General, U. S. Public Health Service, Washington, D. C.

Reception and Dancing.

Second Session—Luncheon—Thursday

Reports of the Four Standing Committees of the Association:

Committee on Administrative Practice. *Chairman,* C.-E. A. WINSLOW, DR.P.H., Yale University, New Haven, Conn.

Committee on Fellowship and Membership. *Chairman,* SALLY LUCAS JEAN, New York, N. Y.

Committee on Meetings and Publications. *Chairman,* C. C. YOUNG, D.P.H., Director of Laboratories, State Department of Health, Lansing, Mich.

Committee on Research and Standards. *Chairman,* ABEL WOLMAN, Chief Engineer, State Department of Health, Baltimore, Md.

Third Session—Banquet—Thursday Evening

The **Duty of the State in the Matter of Health.** HONORABLE ATHANASE DAVID, Provincial Secretary, Quebec, Que.

Announcement of Awards.

Dancing.

SPECIAL SESSIONS

SYMPOSIUM ON TOXOID IMMUNIZATION

Tuesday Morning

Presiding: C. C. YOUNG, D.P.H., Director of Laboratories, State Department of Health, Lansing, Mich.

Toxoid versus Toxin-antitoxin in Immunization of Children under Various Conditions. WILLIAM H. PARK, M.D., and MAY C. SCHROEDER, M.D., Bureau of Laboratories, Department of Health, New York, N. Y.

The Degree of Immunization in the Guinea Pig from the Injection of Diphtheria Toxoid, (a) of Different Strengths, (b) at Various Intervals, and (c) of Treated Toxoids. OLGA R. POVITZKY, M.D., Bureau of Laboratories, Department of Health, New York, N. Y.

Discussion. P. J. MOLONEY, PH.D., Connaught Laboratories, University of Toronto, Toronto, Ont.

Advantages of Toxoid in Diphtheria Prophylaxis. W. T. HARRISON, M.D., National Institute of Health, Washington, D. C.

Experiences with Toxoid in Toledo. JOHN L. LAVAN, M.D., Commissioner of Health, Toledo, O.

Experiences with Toxoid in Canada. R. D. DEFRIES, M.D., D. T. FRASER, D.P.H., NEIL E. MCKINNON, M.B., and P. J. MOLONEY, PH.D., Connaught Laboratories, University of Toronto, Toronto, Ont.

The Inunction Method of Immunization Against Diphtheria. C. C. YOUNG, D.P.H., Director of Laboratories, C. D. BARRETT, M.D., Epidemiologist, State Department of Health, Lansing, Mich., and MORTIMER BYE, William S. Merrell Company, Cincinnati, O.

Concentrated Toxoid. W. E. BUNNEY, PH.D., State Department of Health, Lansing, Mich.

SYMPOSIUM ON RURAL SANITATION

Wednesday Morning

Presiding: JOHN A. FERRELL, M.D., DR.P.H., Associate Director, International Health Division, Rockefeller Foundation, New York, N. Y.

Rural or County Health Service.

Viewed from National Standpoint: Importance, Policies, Support. JOHN A. AMYOT, M.D., Deputy Minister of Health, Ottawa, Ont., RAFAEL SILVA, M.D., Director of Public Health Department of Mexico, Mexico City, Mex., and HUGH S. CUMMING, M.D., Surgeon-General, U. S. Public Health Service, Washington, D. C.

Viewed from Provincial and State Standpoints: Organization, Financing, Program, Personnel. ALPHONSE LESSARD, M.D., Director, Provincial Bureau of Health, Quebec, Que., A. T. MCCORMACK, M.D., State Health Officer, Louisville, Ky., and F. J. UNDERWOOD, M.D., State Health Officer, Jackson, Miss.

Viewed from the County Standpoint: Organization, Activities, Financing, Personnel. J. E. SYLVESTRE, M.D., Health Officer, Levis County, Que., R. M. ATWATER, M.D., DR.P.H., Health Officer, Cattaraugus County, Olean, N. Y., J. B. BLACK, M.D., County Health Officer, Rutherford County, Murfreesboro, Tenn., and W. A. MCINTOSH, M.D., State Department of Health, Lansing, Mich.

Discussion. W. F. DRAPER, M.D., Assistant Surgeon-General, U. S. Public Health Service, Washington, D. C., E. L. BISHOP, M.D., State Commissioner of Health, Nashville, Tenn., THOMAS PARRAN, JR., M.D., State Commissioner of Health, Albany, N. Y., and ALLEN W. FREEMAN, M.D., Professor of Public Health Administration, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

SYMPOSIUM ON HEALTH FACTS AND HEALTH EDUCATION

Thursday Morning

Presiding: CHARLES F. WILINSKY, M.D., Deputy Commissioner, Child Hygiene Division, Department of Health, Boston, Mass.

What to Tell (Health Facts). DONALD B. ARMSTRONG, M.D., SC.D., Fourth Vice-President, Welfare Division, Metropolitan Life Insurance Company, New York, N. Y.

Motivating Men. EDWARD L. BERNAYS, Counsel on Public Relations, New York, N. Y.

What Is Health News? GEORGE F. WRIGHT, Editor, *Montreal Daily Star,* Montreal, Que.

Cholera Prevention Parade in Shanghai. *Motion Picture.* W. W. PETER, M.D., DR.P.H., Director, Health Service, Cleanliness Institute, New York, N. Y.

JOINT SESSIONS

PUBLIC HEALTH EDUCATION AND PUBLIC HEALTH NURSING SECTIONS

Monday Morning

HEALTH EDUCATION IN HIGH SCHOOL

What Constitutes Health Education in the High School? IAGO GALDSTON, M.D., Medical Information Bureau, New York Academy of Medicine, New York, N. Y.

Health—Where Can It Be Taught? PROFESSOR CLAIR E. TURNER, Massachusetts Institute of Technology, Cambridge, Mass.

How It Is Being Taught by a Public Health Nurse. ETTA A. CREECH, R.N., Teacher of Hygiene, Heights High School, Cleveland Heights, O.

CHILD HYGIENE AND PUBLIC HEALTH NURSING SECTIONS

Monday Afternoon

Presiding: C. M. HINCKS, M.D., Director, Canadian National Committee for Mental Hygiene, and General Director, United States National Committee for Mental Hygiene, Toronto, Ont.

SYMPOSIUM ON MENTAL HYGIENE

When Is a Community Ready for a Mental Hygiene Clinic Service?

Mental Hygiene Concepts. GEORGE K. PRATT, M.D., Associate Medical Officer, National Committee for Mental Hygiene, New York, N. Y.

Minimum Community Provisions Necessary in Related Fields of Endeavor.

a. **Education.** No author.

b. **Social Work.** C. C. CARSTENS, PH.D., Executive Director, Child Welfare League of America, New York, N. Y.

c. **Medical.** No author.

d. **Public Health Nursing.** KATHARINE TUCKER, R.N., General Director, National Organization for Public Health Nursing, New York, N. Y.

A Suggested Community Program. GEORGE S. STEVENSON, M.D., Field Consultant, National Committee for Mental Hygiene, New York, N. Y.

Discussion. STANLEY H. OSBORN, M.D., State Commissioner of Health, Hartford, Conn.

What Can a Community Do When It Is Not Yet Ready to Establish a Mental Hygiene Clinic?

Suggestions for Local Consideration. HERMAN G. WEISKOTTEN, M.D., Dean, College of Medicine, Syracuse University, Syracuse, N. Y.

Discussion. EFFIE J. TAYLOR, Professor of Nursing, Yale University School of Nursing, New Haven, Conn.

HEALTH OFFICERS AND EPIDEMIOLOGY SECTIONS

Thursday Morning

Control of Syphilis from the Epidemiologist's Point of View. THOMAS PARRAN, JR., M.D., State Commissioner of Health, Albany, N. Y.

Syphilis in a Rural Colored Population in Tennessee. E. L. BISHOP, M.D., State Commissioner of Health, and associates of the State Department of Health, Nashville, Tenn.

Practicability of Epidemiological Methods in the Control of Syphilis. WILLIAM L. MUNSON, M.D., District Health Officer, Granville, N. Y.

Control of Syphilis from the Health Officer's Viewpoint. N. A. NELSON, State Department of Health, Boston, Mass.

LABORATORY AND FOOD, DRUGS AND NUTRITION SECTIONS

Wednesday Morning

Types of Streptococci in Infected Udders That Show No Clinical Evidence of Mastitis. G. J. HUCKER, PH.D., Chief in Research, New York State Agricultural Experiment Station, Geneva, N. Y.

Health Examinations of Milk Handlers. MILLARD KNOWLTON, M.D., and HARRIET BIXBY, State Department of Health, Hartford, Conn.

Bacteriological Studies of an Epidemic of Septic Sore Throat. W. D. FROST, DR.P.H., MILDRED GUMM and W. D. STOVALL, M.D., Laboratories of Agricultural Bacteriology and the Hygienic Laboratory, University of Wisconsin, Madison, Wis.

Montreal Milk Epidemic of 1927. H. D. PEASE, M.D., Pease Laboratories, New York, N. Y.

Judging the Efficiency of the Enforcement of Sanitary Milk Regulations. J. D. BREW, PH.D., Milk Specialist, Bureau of Milk Sanitation, State Department of Health, Albany, N. Y.

PUBLIC HEALTH ENGINEERING AND FOOD, DRUGS AND NUTRITION SECTIONS

Wednesday Afternoon

Report **of the Committee on Milk and Dairy Products.** (Food, Drugs and Nutrition Section.) *Chairman,* WILLIAM B. PALMER, Executive Officer, Milk Inspection Association of the Oranges, Orange, N. J.

Report **of the Committee on Milk Supply.** (Public Health Engineering Section.) *Chairman,* C. A. HOLMQUIST, Director, Division of Sanitation, State Department of Health, Albany, N. Y.

Milk **Sanitation in Canada.** R. H. MURRAY, Director, Division of Sanitation, Department of Public Health, Regina, Sask.

Discussion. L. C. FRANK, Office of Milk Investigations, U. S. Public Health Service, Washington, D. C.

Sanitary **Regulation of Canneries.** E. L. FILBY, Chief Engineer, Bureau of Engineering, State Board of Health, Jacksonville, Fla.

Ice **Cream Sanitation and Control.** F. W. FABIAN, PH.D., Associate Professor of Bacteriology, Michigan State College, East Lansing, Mich.

Import **Milk Control Methods.** H. B. SWITZER, Chief, Rouses Point Import Milk Inspection Station, U. S. Department of Agriculture, Rouses Point, N. Y.

VITAL STATISTICS AND EPIDEMIOLOGY SECTIONS

Wednesday Afternoon

Tuberculosis in the Negro in Rural Tennessee. E. L. BISHOP, M.D., State Commissioner of Health, and associates of the State Department of Health, Nashville, Tenn.

The Incidence of Tuberculosis in the Industrial Population. LOUIS I. DUBLIN, PH.D., Statistician, Metropolitan Life Insurance Company, New York, N. Y.

Tuberculosis in Young Females. W. J. V. DEACON, M.D., Director, Bureau of Records and Statistics, Department of Health, Lansing, Mich.

Trend of Tuberculosis in Massachusetts as Illustrated by the Three Dimensional Graph. G. SMILLIE, M.D., and W. F. WELLS, School of Public Health, Harvard University, Boston, Mass.

SECTION SESSIONS

LABORATORY

First Session—Monday Morning

Report of the Committee on Standard Methods. (Recommendations for the Seventh Edition of *Standard Methods of Water Analysis.*) *Secretary,* JOHN F. NORTON, PH.D., Department of Health Laboratories, Detroit, Mich.

Laboratory Methods Used in the Official Control of Milk Supplies. ROBERT S. BREED, PH.D., and CARL S. PETERSON, PH.D., New York State Agricultural Experiment Station, Geneva, N. Y.

Results on Cold Clarification with Reference to Bacterial and Chemical Changes in Milk. N. E. LAZARUS, President, Lacteal Analytical Laboratories, Buffalo, N. Y.

The Interpretation of Direct Colon-Aerogenes Counts in Well Waters. FRED O. TONNEY, M.D., and RALPH E. NOBLE, Department of Health, Chicago, Ill.

Some Experimental Evidence Concerning the Interpretation of Laboratory Findings in Rural Water Supplies of the Appalachian Area. EDMUND K. KLINE, DR.P.H., Cattaraugus County Department of Health Laboratory, Olean, N. Y.

Monilias, Yeasts and Cryptococci, Their Pathogenicity, Classification and Identification. RHODA W. BENHAM, PH.D., Laboratory for Medical Mycology of the Department of Dermatology, College of Physicians and Surgeons, Columbia University, New York, N. Y.

Minimal "Chlorine Death Points" of Pathogenic Fungi. GERALD HOEFT and JOHN L. WHITE, M.D., Bureau of Laboratories and Research, Department of Health, Chicago, Ill.

The Identification of Certain Yeast-like Fungi Pathogenic for Man. W. D. STOVALL, M.D., and ANNA BUBOLZ, State Laboratory of Hygiene, Madison, Wis.

Some Factors Influencing the Growth and Morphology of Corynebacterium Diphtheriae in Throat Cultures. ROSS L. LAYBOURN, Laboratories of State Board of Health, Jefferson City, Mo.

The Preparation of Stabilized Schick Test Toxin. P. J. MOLONEY, PH.D., and E. M. TAYLOR, PH.D., Connaught Laboratories, University of Toronto, Toronto, Ont.

Second Session—Thursday Afternoon

Observations on the Etiology of Epidemic Influenza. I. S. FALK, PH.D., Washington, D. C.

The Cancer Situation as It Affects the Public Health Laboratory, with Demonstration of Actual Living and Growing Human Cancer Cells. JOSEPH COLT BLOODGOOD, M.D., Clinical Professor of Surgery, Johns Hopkins University, Baltimore, Md.

The Coli-Aerogenes Determination in Pasteurization Control. M. H. MCCRADY, Chief of Laboratories, Provincial Bureau of Health, Montreal, Que.

Eberthella Paradysentery Sonne as a Causative Agent of Diarrheal Disease in Connecticut. HENRY WELCH, PH.D., and FRIEND LEE MICKLE, Bureau of Laboratories, State Department of Health, Hartford, Conn.

Correlated **Carbohydrate and Serologic Variations in the Morgan's Bacillus Group.** L. C. HAVENS, M.D., and ANNE G. IRWIN, State Board of Health, Montgomery, Ala.

Studies **on the Self-Disinfecting Power of the Skin.** JOHN F. NORTON, PH.D., and MARGUERITE F. NOVY, Department of Health Laboratories, Detroit, Mich.

Food **Poisoning Due to Toxic Substances Formed by Strains of the Cloacae-Aerogenes Group.** RUTH GILBERT, M.D., MARION B. COLEMAN and ALICE B. LAVIANO, Division of Laboratories and Research, State Department of Health, Albany, N. Y.

Action **of Some Common Disinfectants on Phagocytes in Vivo.** E. MEGRAIL, M.D., and D. J. SHAW, Department of Hygiene and Bacteriology, School of Medicine, Western Reserve University, Cleveland, O.

The **Effect of Scarlatinal Toxin on Chinchilla Rabbits.** FRIEDA H. FRASER, Research Associate, Connaught Laboratories, University of Toronto, Toronto, Ont.

(*For joint session see page 906.*)

HEALTH OFFICERS

First Session—Monday Afternoon

Evaluation of Diphtheria Prevention Work. EDWARD S. GODFREY, JR., M.D., State Department of Health, Albany, N. Y.

Discussion. W. W. BAUER, M.D., Commissioner of Health, Racine, Wis.

Observation or Control of Communicable Diseases. HOWARD A. STREETER, M.D., City Isolation Hospital, Manchester, N. H.

Discussion. JOSEPH SMITH, M.D., Department of Health, Providence, R. I.

Tuberculosis Control Without Hospitalization. C. H. KIBBEY, M.D., Director of Sanitation, Tennessee Coal, Iron and Railroad Company, Fairfield, Ala.

Discussion. M. W. GLASGOW, M.D., Fairfield, Ala.

What the Nurse Expects (or Would Like to Expect) of Her Chief, the Health Officer. AGNES J. MARTIN, R.N., Director of Nurses, Department of Health, Syracuse, N. Y.

Discussion. H. J. KNAPP, M.D., Health Officer, Cleveland, O.

Second Session—Wednesday Afternoon

Discussion of the Recommendations of the Committee on Business Management.* *Chairman,* GEORGE C. RUHLAND, M.D., Commissioner of Health, Syracuse, N. Y.

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* Mimeographed copies of the Report will be distributed to members of the Section.

Evolution of Public Health Administration. PETER H. BRYCE, M.D., Ottawa, Ont.

What Should a Health Department Be Doing About Cancer? CLARENCE C. LITTLE, Sc.D., Managing Director, American Society for the Control of Cancer, New York, N. Y.

Discussion. GEORGE H. BIGELOW, M.D., State Health Commissioner, Boston, Mass.

What Should a Health Department Be Doing About Accidental Deaths? LOUIS I. DUBLIN, PH.D., Statistician, Metropolitan Life Insurance Company, New York, N. Y.

What Should a Health Department Be Doing About Mental Hygiene? EDGAR VAN NORMAN EMERY, M.D., Yale Medical School, New Haven, Conn.

Discussion. A. GRANT FLEMING, M.D., Professor of Public Health and Preventive Medicine, McGill University, Montreal, Que.

Joint Dinner—Wednesday

Health Officers Section.

Child Hygiene Section.

American Association of School Physicians.

International Society of Medical Health Officers.

(*For joint session see page 906.*)

VITAL STATISTICS

First Session—Monday Morning

Report of the Committee on Registration Affairs. *Chairman,* T. F. MURPHY, M.D., Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C.

Seasonal Incidence of Whooping Cough in the United States. GAIUS E. HARMON, M.D., Department of Hygiene and Bacteriology, School of Medicine, Western Reserve University, Cleveland, O.

Have We Still a Smallpox Menace? GEORGE H. VAN BUREN, Supervisor, Statistical Bureau, Metropolitan Life Insurance Company, New York, N. Y.

Report of the Committee on Proper Allocation of Records. *Chairman,* J. V. DEPORTE, PH.D., Director, Division of Vital Statistics, State Department of Health, Albany, N. Y.

Vital Statistics in the Development of Neighborhood Health Centers in New York City. GODIAS J. DROLET, Consulting Statistician, Committee on Neighborhood Health Development, and LOUIS WEINER, Vital Statistician, Department of Health, New York, N. Y.

Discussion. CHARLES F. WILINSKY, M.D., Deputy Commissioner, Child Hygiene Division, Department of Health, Boston, Mass.

Basic Records for Use in a County Health Department. JOHN COLLINSON, M.D., DR.P.H., Chief, Bureau of Vital Statistics, State Department of Health, Baltimore, Md.

Report of the Committee on Coöperation with National Safety Council in Preparing Forms for Additional Information Regarding Accidents. *Acting Chairman,* E. W. KOPF, Metropolitan Life Insurance Company, New York, N. Y.

Second Session—Tuesday Afternoon

SYMPOSIUM ON VITAL STATISTICS REGISTRATION PROBLEMS

Third Session—Thursday Morning

Morbidity from Heart Disease in the State of New York (Exclusive of New York City). J. V. DEPORTE, PH.D., Director, Division of Vital Statistics, State Department of Health, Albany, N. Y.

Report of the Committee on Registration of Births of Illegitimate and Adopted Children. *Acting Chairman,* SHELDON L. HOWARD, State Registrar of Vital Statistics, State Department of Health, Springfield, Ill.

Report of the Committee on Public Health Climatology. *Chairman,* E. W. KOPF, Metropolitan Life Insurance Company, New York, N. Y.

A Study of Heart Disease in Continuation School Boys, Statistics, Comparative Statistics, Clinical Signs, etc. JEROME MEYERS, M.D., Department of Health, New York, N. Y.

Discussion. ELWOOD S. MORTON, M.D., Chief, Bureau of Industrial and Adult Hygiene, Department of Health, New York, N. Y.

An Analysis of the Birth Statistics of the State of New York for a Period of Ten Years. ELIZABETH PARKHURST, State Department of Health, Albany, N. Y.

Report of the Committee on Forms and Methods of Statistical Practice. *Chairman,* A. W. HEDRICH, SC.D., Associate in Biostatistics, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

A Study in Maternal Mortality. E. S. MACPHAIL, Chief, Division of Census and Vital Statistics, Dominion Bureau of Statistics, Ottawa, Ont.

Mortality by Census Tracts in Cincinnati for 1930. FLOYD P. ALLEN, M.D., Secretary, The Heart Council of Greater Cincinnati, Cincinnati, O.

(*For joint session see page 907.*)

PUBLIC HEALTH ENGINEERING

First Session—Tuesday Morning

The Cost of Sanitary Surveys of Streams. W. L. STEVENSON, Chief Engineer, State Department of Health, Harrisburg, Pa.

Discussion.

Report of the Committee on Waterways Pollution. *Chairman,* EARNEST BOYCE, Director and Chief Engineer, Division of Sanitation, State Board of Health, Lawrence, Kans.

The Sanitary Inspector in Rural Sanitation. H. W. VAN HOVENBERG, Sanitary Engineer, St. Louis Southwestern Railway Company, Texarkana, Tex.

Discussion. W. F. DRAPER, M.D., Assistant Surgeon-General, U. S. Public Health Service, Washington, D. C.

Report of the Committee on Rural Sanitation. *Chairman,* H. B. HOMMON, Sanitary Engineer, U. S. Public Health Service, San Francisco, Calif. (To be presented by title only.)

Town Planning and Housing in Canada. F. A. DALLYN, Consulting Public Health and Municipal Engineer, Toronto, Ont.

Discussion.

Report of the Committee on Environmental Sanitation. *Chairman,* G. W. PUTNAM, Director of Research, Creamery Package Manufacturing Company, Chicago, Ill. (To be presented by title only.)

Modern Housing and Sanitation. J. H. FINK, Secretary, Housing Committee, Bureau of Charities, Brooklyn, N. Y.

Joint Dinner—Wednesday

Public Health Engineering Section and Conference of State Sanitary Engineers. Annual Engineers' Stag Dinner Party.

Second Session—Thursday Morning

SYMPOSIUM ON DROUGHT

Drought and Health. No author.

Effect of Drought on Water Supplies. E. S. TISDALE, Director, Division of Sanitary Engineering, State Department of Health, Charleston, W. Va.

Discussion. H. E. MOSES, Assistant Chief Engineer, Department of Health, Harrisburg, Pa.

The Effect of Sewage on Water Supplies During Times of Drought. No author.

An Epidemiological Study of Water-Borne Enteritis. M. V. VELDEE, M.D., Surgeon, U. S. Public Health Service, Washington, D. C.

Discussion. LLOYD ARNOLD, M.D., Department of Pathology and Bacteriology, College of Medicine, University of Illinois, Chicago, Ill.

Teaching Engineers Public Health. PROFESSOR SAMUEL C. PRESCOTT, Department of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, Mass.

Discussion. PROFESSOR E. B. PHELPS, College of Physicians and Surgeons, Columbia University, New York, N. Y.

Report of the **Committee on Education and Training.** *Chairman,* ABEL WOLMAN, Chief Engineer, State Department of Health, Baltimore, Md.

Third Session—Thursday Afternoon

Contamination of **Water Mains by Jute Packing.** C. H. SPAULDING, Superintendent of Water Purification, Springfield, Ill.

Report of the **Committee on Water Supply.** *Chairman,* J. R. BAYLIS, Engineer, Bureau of Engineering, Department of Public Works, Chicago, Ill.

Report of the **Sub-Committee on Ground Water of the Committee on Water Supply.** *Sub-Chairman,* W. S. JOHNSON, Chief Public Health Engineer, State Board of Health, Jefferson City, Mo. (To be presented by title only.)

The **Montreal Water Supply.** C. J. DES BAILLETS, Chief Engineer, Montreal Water Board, Montreal, Que.

Report of the **Committee on Disaster Relief.** *Chairman,* E. L. FILBY, Chief Engineer, State Board of Health, Jacksonville, Fla. (To be presented by title only.)

Report of the **Committee on Industrial Plant Sanitation.** *Chairman,* F. GARDNER LEGG, JR., Sanitary Engineer, Department of Health, Detroit, Mich. (To be presented by title only.)

Report of the **Committee on Record Forms.** *Chairman,* I. W. MENDELSOHN, Sanitary Engineer, Washington, D. C.

Discussion. JOEL I. CONNOLLY, Chief Sanitary Engineer, Department of Health, Chicago, Ill.

Report of the **Committee on Sewage Disposal.** *Chairman,* LANGDON PEARSE, Sanitary Engineer, Sanitary District of Chicago, Chicago, Ill.

Section Business.

(*For joint session see page 907.*)

INDUSTRIAL HYGIENE

First Session—Monday Afternoon

Presiding: L. R. THOMPSON, M.D., *Chairman,* Industrial Hygiene Section.

Trends and Opportunities in Industrial Hygiene. L. R. THOMPSON, M.D., Assistant Surgeon General, U. S. Public Health Service, Washington, D. C.

Endocrin Dysfunctions Among Industrial Workers. VOLNEY S. CHENEY, M.D., Armour and Company, Chicago, Ill.

Discussion.

Relative Pneumonia Fatality Among Surface Workers and Miners. C. H. KIBBEY, M.D., Director of Sanitation, Tennessee Coal, Iron & Railroad Company, Fairfield, Ala.

Discussion.

Prevalence of Respiratory Diseases Among Employees, with Reference to Age, Sex and Occupation. MICHAEL LAKE, M.D., R. H. Macy and Company, New York, N. Y.

Discussion.

Section Business.

INDUSTRIAL HYGIENE SECTION COMMITTEE REPORTS

The following Committees will make reports to the Section Council. Mimeographed copies of these reports will be available to all those in attendance.

Committee on Standard Practices in the Problem of Compensation of Occupational Diseases. *Chairman,* HENRY H. KESSLER, M.D., State Department of Labor, Newark, N. J.

Committee on Lead Poisoning. *Chairman,* EMERY R. HAYHURST, M.D., State Department of Health, Columbus, O.

Committee on Pneumonoconiosis. *Chairman,* R. R. SAYERS, M.D., U. S. Bureau of Mines, Washington, D. C.

Second Session—Tuesday Morning

The Toxicity of Methyl Alcohol. HENRY FIELD SMYTH, M.D., University of Pennsylvania, Philadelphia, Pa.

Discussion.

Silicosis in the Abrasive Powder Industry. HENRY H. KESSLER, M.D., State Department of Labor, Newark, N. J.

Discussion.

The Advance Program of Industrial Hygiene in New York State. GEORGE M. PRICE, M.D., New York State Department of Health, New York, N. Y.

Discussion.

Old Age Security Work. LUTHER GULICK, PH.D., Director, National Institute of Public Administration, New York, N. Y.

Discussion.

Section Council Meeting.

Dinner in honor of Dr. Alice Hamilton—Tuesday

Presiding: ANTHONY J. LANZA, M.D., Medical Consultant, General Motors Corporation, New York, N. Y.

Alice Hamilton the Industrial Hygienist. C.-E. A. WINSLOW, DR.P.H., Yale University, New Haven, Conn.

My **Years in Industrial Hygiene.** ALICE HAMILTON, M.D., Assistant Professor, Industrial Medicine, Harvard School of Public Health, Boston, Mass.

Third Session—Wednesday Morning

Work **Environment as a Factor in General Health of Workers.** BERNARD J. NEWMAN, Managing Director, Philadelphia Housing Association, Philadelphia, Pa.

Discussion.

Medical **Services of the Bell Telephone Company of Canada.** A. R. PENNOYER, M.D., Medical Director, The Bell Telephone Company of Canada, Montreal, Que.

Discussion.

Compensation **for Silicosis.** J. G. CUNNINGHAM, M.B., Director, Division of Industrial Hygiene, Department of Health, Toronto, Ont.

Discussion. T. N. DEAN, Statistician, Workman's Compensation Board, Toronto, Ont.

Physical **Impairment Among One Thousand Negro Workers.** FLOYD P. ALLEN, M.D., Secretary, The Heart Council of Greater Cincinnati, Cincinnati, O.

Discussion.

Section Council Meeting.

FOOD, DRUGS AND NUTRITION

First Session—Monday Afternoon

A Basis of Rationing Federal Prisoners. PAUL E. HOWE, PH.D., Senior Biological Chemist in charge Nutrition Investigations, Bureau of Animal Industry, U. S. Department of Agriculture, and A. H. MACCORMICK, Assistant Director, Bureau of Prisons, U. S. Department of Justice, Washington, D. C.

Public Health Aspects of Frozen Foods. CARL R. FELLERS, PH.D., Research Professor, Horticultural Manufactures, Massachusetts State College, Amherst, Mass.

A Health Aspect of Frozen Vegetables. L. H. JAMES, PH.D., and R. P. STRAKA, Food Research Division, Bureau of Chemistry and Soils, U. S. Department of Agriculture, Washington, D. C.

Report of Committee on Fish and Shell Fish. *Chairman,* A. C. HUNTER, PH.D., In charge, Bacteriological Unit, Food Control Laboratory, Food and Drug Administration, U. S. Department of Agriculture, Washington, D. C.

Are Chromates Poisonous? M. J. PRUCHA, PH.D., Professor of Dairy Bacteriology, Agricultural Experiment Station, University of Illinois, Urbana, Ill.

Report of Committee on Cereals and Their Products. *Chairman,* F. C. BLANCK, PH.D., Food Research Division, U. S. Bureau of Chemistry and Soils, Washington, D. C.

Second Session—Tuesday Morning

Report of the Committee on Sanitary Regulations of Public Eating Places. *Chairman,* J. H. SHRADER, PH.D., Research Laboratories, National Dairy Products Corporation, Baltimore, Md.

The Principles and Practice of Health through Anabolic Nutrition. FRANCIS LOWELL BURNETT, M.D., Massachusetts General and Peter Brigham Hospital, Boston, Mass.

Report of the Committee on Nutritional Problems. *Chairman,* PROFESSOR HENRY C. SHERMAN, Department of Chemistry, Columbia University, New York, N. Y.

The Effect of Lead Arsenate Spray on the Composition and Vitamin Content of Oranges. E. M. NELSON, PH.D., and H. H. MOTTERN, Bureau of Chemistry and Soils, U. S. Department of Agriculture, Washington, D. C.

Report of the Committee on Meat and Meat Products. *Chairman,* PAUL E. HOWE, PH.D., Senior Biological Chemist in charge Nutrition Investigations, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Report of the Committee on Fruits and Vegetables. *Chairman,* WALTER H. EDDY, PH.D., Teachers College, Columbia University, New York, N. Y.

Luncheon Session—Tuesday

Section Business.

(*For joint sessions see pages 906 and 907.*)

CHILD HYGIENE

First Session—Tuesday Afternoon

PUBLIC HEALTH AIMS AND PROFESSIONAL SERVICES DURING INFANCY, PRESCHOOL AND SCHOOL AGES

Medical. HELEN MACMURCHY, M.D., Chief, Division of Child Welfare, Department of Pensions and National Health, Ottawa, Ont.

Nursing. HORTENSE HILBERT, R.N., Staff Associate on Nursing, American Child Health Association, New York, N. Y.

Dental. ALFRED WALKER, D.D.S., The Murry and Leonie Guggenheim Dental Clinic, New York, N. Y.

Discussion.

ADMINISTRATION—ROUND TABLE

Rural and Town.

Administrator. ANNA RUDE, M.D., Director, Bureau of Maternal and Child Hygiene, Los Angeles County Health Department, Los Angeles, Calif.

Pediatrician. J. H. MASON KNOX, M.D., Chief, Bureau of Child Hygiene, State Department of Health, Baltimore, Md.

Nurse. ANNA HEISLER, R.N., Professor of Public Health Nursing, Washington University, St. Louis, Mo.

Dentist. HARRY S. THOMSON, D.M.D., Field Secretary, Canadian Dental Hygiene Council, Toronto, Ont.

Medium City.

Administrator. GEORGE C. RUHLAND, M.D., Commissioner of Health, Syracuse, N. Y.

Pediatrician. W. W. BAUER, M.D., Commissioner of Health, Racine, Wis.

Dentist. GEORGE H. WANDEL, D.D.S., Supervisor, Bureau of Dental Health Education, American Dental Association, Chicago, Ill.

Large City.

Administrator. HERMAN N. BUNDESEN, M.D., Commissioner of Health, Chicago, Ill.

Nurse. ESTHER M. BEITH, Executive Director, Child Welfare Association, Montreal, Que.

Specialists:

Nutrition. LUCY H. GILLETT, Superintendent, Nutrition Bureau, Association for Improving the Condition of the Poor, New York, N. Y.

Recreation. A. S. LAMB, M.D., Director, Department of Physical Education, McGill University, Montreal, Que.

Luncheon Session—Wednesday

Second Session—Thursday Afternoon

EDUCATION AND TRAINING OF PERSONNEL FOR CHILD HEALTH WORK

What Should Be Taught and How.

General Considerations Including Personal Qualifications. ELIZABETH M. GARDINER, M.D., Director, Division of Maternity and Child Hygiene, State Department of Health, Albany, N. Y.

Administrative. JOHN A. FERRELL, M.D., D.P.H., Associate Director, International Health Division, Rockefeller Foundation, New York, N. Y.

Medical. J. H. MASON KNOX, M.D., Chief, Bureau of Child Hygiene, State Department of Health, Baltimore, Md.

Nursing. HELEN CHESLEY PECK, R.N., Executive Secretary, Infant Welfare Society, Minneapolis, Minn.

Dental. No author.

Social Aspects. No author.

Discussion.

What Is Being Taught and Where (Survey).

Graduate Courses Available (Public Health Schools).

For Physicians. Theory and Practice. No author.

For Nurses. Theory and Practice. MARION G. HOWELL, R.N., Director, School of Applied Social Sciences, Western Reserve University, Cleveland, O.

Staff Education (Survey).

For Physicians. Theory and Practice. WALTER S. CORNELL, M.D., Director, Medical Inspection of Public Schools, Philadelphia, Pa.

For Nurses. Theory and Practice. ELIZABETH FOX, R.N., Director, Visiting Nurse Association, New Haven, Conn.

(*For joint session see page 905. For joint dinner see page 910.*)

PUBLIC HEALTH EDUCATION

First Session—Tuesday Morning

SCIENTIFIC FACTS FOR PUBLIC CONSUMPTION

Facts from Technical Sections.

Epidemiology. EDWARD S. GODFREY, JR., M.D., Director, Division of Communicable Diseases, State Department of Health, Albany, N. Y.

Child Hygiene. RICHARD A. BOLT, M.D., Director, Cleveland Child Health Association, Cleveland, O.

Food, Drugs and Nutrition. JAMES A. TOBEY, DR.P.H., Director, Health Service, The Borden Company, New York, N. Y.

How May These Facts Be Given to the Public? RAYMOND S. PATTERSON, PH.D., Life Conservation Service, John Hancock Mutual Life Insurance Company, Boston, Mass.

Dinner Session—Tuesday

Closed session—for members and fellows of the Section only

Section Business.

Second Session—Wednesday Morning

NEWER TOOLS FOR DRAMATIZING HEALTH EDUCATION TO THE GENERAL PUBLIC

New Opportunities in the Use of the Motion Picture. H. E. KLEINSCHMIDT, M.D., Director, Health Education Service, National Tuberculosis Association, New York, N. Y.

Radio Broadcasting in Health Education. ELIZABETH C. NICKERSON, State Department of Health, Hartford, Conn.

Mass Health Education in America and Europe. HOMER N. CALVER, New York, N. Y., and BERTRAND BROWN, Director, Division of Publications, Milbank Memorial Fund, New York, N. Y.

Luncheon Session—Wednesday

What's **On Your Mind?** EVART G. ROUTZAHN, Associate Director, Surveys and Exhibits Department, Russell Sage Foundation, New York, N. Y.

Questions and **Answers About Popular Health Education.**

(*For joint session see page 905.*)

PUBLIC HEALTH NURSING

Luncheon Session—Tuesday

First Session—Tuesday Afternoon

Getting **Public Health Needs Across to Appropriating Bodies.**

By a Municipal Health Department. HENRY F. VAUGHAN, D.P.H., Commissioner of Health, Detroit, Mich.

By a Rural Nursing Organization. ELIZABETH A. RUSSELL, R.N., Director, Provincial Public Health Nurses, Winnipeg, Man.

By a Community Fund Agency. HELEN V. STEVENS, R.N., Director, Public Health Nursing Association, Pittsburgh, Pa.

Discussion.

Prenatal Nursing in the Province of Quebec. ALICE AHERN, R.N., Assistant Superintendent in Charge of Canadian Service, Metropolitan Life Insurance Company, Ottawa, Ont.

Public Health Nursing Education. LILLIAN HUDSON, R.N., Department of Nursing, Teachers College, Columbia University, New York, N. Y.

(*For joint session see page 905.*)

EPIDEMIOLOGY SECTION

First Session—Monday Morning

Evidences of Community Protection Against Diphtheria through Use of Toxoid. WILLIAM WARWICK, M.D., D.P.H., District Medical Officer of Health, St. John, N. B.

The Epidemiology of Scarlet Fever in Relation to Sinus Infection. A. CLEMENT SILVERMAN, M.D., Department of Health, Syracuse, N. Y.

A Milk-borne Typhoid Outbreak at Lincoln, Concord and Weston, Mass. M. J. ROSENAU, M.D., Harvard Medical School, Boston, Mass.

An Epidemiological Study of Amebiasis. From State Department of Health, Nashville, Tenn.

Typhoid Fever in Knoxville. WILLIAM H. ENNEIS, M.D., Bureau of Health, Knoxville, Tenn., and D. F. MILAM, State Department of Health, Nashville, Tenn.

Typhoid Fever in Richmond, Virginia. ALLEN W. FREEMAN, M.D., Professor of Public Health Administration, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

Current Estimation of the Population Susceptible to Measles. A. W. HEDRICH, Sc.D., School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

Epidemiological Practice through the Services of the Medical Practitioner. F. C. MIDDLETON, M.D., Deputy Minister, Department of Health, Regina, Sask.

(*For joint sessions see pages 906 and 907.*)

MEETINGS OF OTHER ORGANIZATIONS

AMERICAN ASSOCIATION OF SCHOOL PHYSICIANS

First Session—Monday—2 P.M.

Presiding, SVEN R. LOKRANTZ, M.D., President, American Association of School Physicians, Los Angeles, Calif.

Addresses of Welcome:

HIS WORSHIP CAMILLIEN HOUDE, Mayor of Montreal.

WILLIAM C. HASSLER, M.D., President Elect, American Public Health Association, Health Officer, San Francisco, Calif.

Presidential Address. SVEN LOKRANTZ, M.D., Los Angeles, Calif.

The School Physician and the School Program. JOHN SUNDWALL, M.D., University of Michigan, Ann Arbor, Mich.

Medical Direction of All School Health Service. JOHN E. BURKE, M.D., Schenectady, N. Y.

No Title. ARNOLD H. KEGEL, M.D., Chicago, Ill.

Second Session—Tuesday—9.30 A.M.

Presiding, SVEN R. LOKRANTZ, M.D.

The Early Recognition of Cardiopathic Conditions in Children of School Age. ROBERT H. HALSEY, M.D., New York, N. Y.

The Incidence of Heart Disease Among Children of School Age. J. V. DEPORTE, M.D., Albany, N. Y.

Preventive and Remedial Measures in Heart Diseases of Children. LAURA B. BENNETT, M.D., Los Angeles, Calif.

Luncheon Session—Tuesday—12.30 P.M.

Presiding, SVEN R. LOKRANTZ, M.D.

Business Session—Tuesday Evening—8 P.M.

Presiding, SVEN R. LOKRANTZ, M.D.

Report of Officers.

Report of Committees.

Election of Officers.

Miscellaneous.

Third Session—Wednesday—9:30 A.M.

Presiding, S. BOUCHER, M.D., D.P.H., Director, Department of Health, Montreal, Que.

Natural and Acquired Posture. JAMES F. ROGERS, M.D., U. S. Bureau of Education, Washington, D. C.

The Recognition and Management of Tuberculosis of Childhood. HENRY D. CHADWICK, M.D., Detroit, Mich.

Tuberculosis Illustrated. STEPHEN A. DOUGLASS, M.D., Valley View Sanitarium, Paterson, N. J.

The Need for Promoting Interest in Convalescent Care. E. H. LEWINSKI CORWIN, M.D., Academy of Medicine, New York, N. Y.

Securing Results in Mouth Hygiene. HARRIS R. C. WILSON, D.D.S., Cleveland, O.

Fourth Session—Thursday—9.30 A.M.

Presiding, EDWARD PERCEY LEWIS, M.D., University of Toronto, Toronto, Ont.

Abnormal Behavior in the Adolescent from the Viewpoint of Endocrinology. WALTER TIMME, M.D., New York, N. Y.

The Hurried, Worried High and Junior High School Girl. A. L. BRANNACK, M.D., Pontiac, Mich.

The Psychological Factor in the Medical Examination of School Children. CATHERINE BRANNICK, M.D., Chicago, Ill.

The Relation of the Psychiatrist to the School Physician. FREDERICK L. PATRY, M.D., Albany, N. Y.

Fifth Session—Thursday—2 P.M.

Presiding, A. GRANT FLEMING, M.D., Professor of Public Health and Preventive Medicine, McGill University, Montreal, Que.

County and Rural Health Service.

In Canada. L. R. VEZINA, M.D., St. Jerome, Que.

In South Dakota. MARGARET W. KOENIG, M.D., Huron, S. Dak.

In Montgomery County, New York. ORRA A. PHELPS, M.D., Fort Plain, N. Y.

In Oakland County, Michigan. JOHN D. MONROE, M.D., Pontiac, Mich.

In Cattaraugus County, New York. CLARENCE A. GREENLEAF, M.D., Olean, N. Y.

The Integration of Health Agencies for the Health of the School Child. FRANCIS H. BARBOUR, Mineola, N. Y.

(*For joint dinner see page 910.*)

CONFERENCE OF STATE SANITARY ENGINEERS

All day Saturday and all day Monday. Annual Engineers' Stag Dinner Party, Wednesday evening.

ASSOCIATION OF WOMEN IN PUBLIC HEALTH

Dinner. Monday evening.

CONFERENCE OF STATE LABORATORY DIRECTORS

(Limited to Directors of State and Provincial Laboratories, Branch Laboratories and their Chief Assistants.)

Luncheon Session. Tuesday.

Afternoon Session. Tuesday.

INTERNATIONAL ASSOCIATION OF DAIRY AND MILK INSPECTORS

Thursday, Friday, and Saturday, September 10, 11, and 12.

AMERICAN SOCIAL HYGIENE ASSOCIATION AND THE CANADIAN SOCIAL HYGIENE COUNCIL

Wednesday. One day Social Hygiene Institute.

INTERNATIONAL SOCIETY OF MEDICAL HEALTH OFFICERS

Week of September 14.

DELTA OMEGA

Luncheon. Monday.

SYMPOSIUM ON BRITISH PUBLIC HEALTH ADMINISTRATION

ON Tuesday afternoon a special session on Health Administration in Great Britain will be held. The speakers will be:

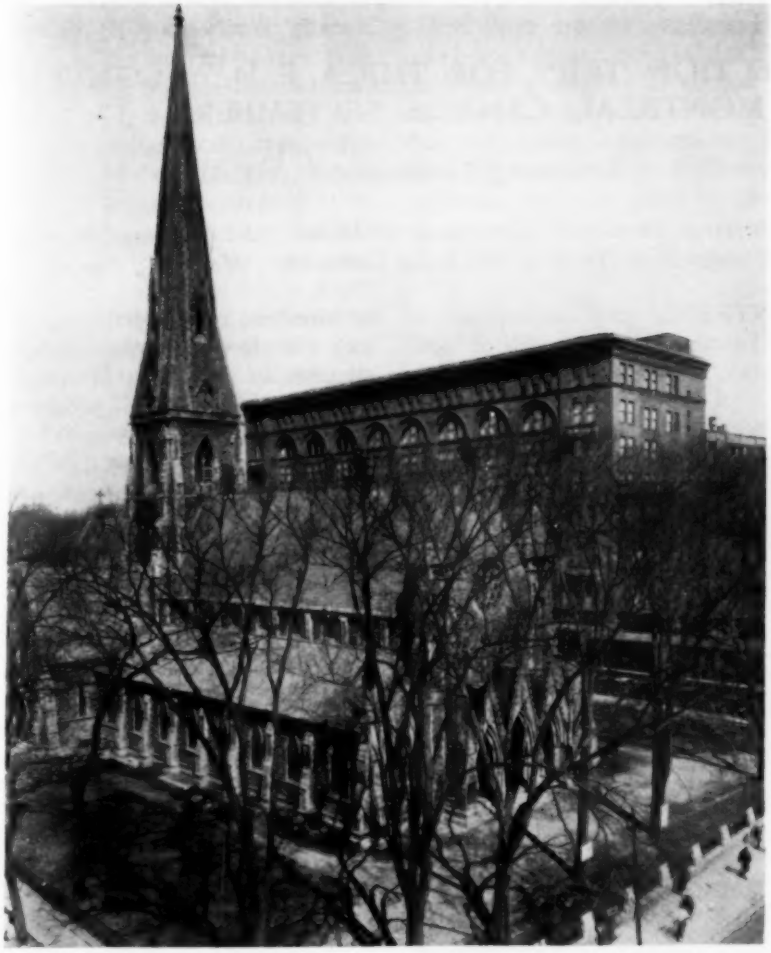
Sir Allan Powell, Chief Public Assistance Officer, London County Council, London

George F. Buchan, M.D., M.R.C.P., D.P.H., Medical Officer of Health, Willesden, London

James Fenton, M.D., D.P.H., Medical Officer of Health, Kensington, London

Charles Porter, M.D., B.Sc., Medical Officer of Health, Marylebone, London

They will discuss trends in British public health administration, education and training of public health workers, maternal and infant health services and hospital administration.



Upper—Christ Church Cathedral (Anglican), a fine example of early English architecture

Lower—Montreal General Hospital

INSPECTION TRIPS FOR THE A. P. H. A. CONVENTION MONTREAL, CANADA, SEPTEMBER 14–17, 1931

THEODORE J. LAFRENIERE, F. A. P. H. A.

Chief Engineer, Provincial Department of Health; and Chairman, Committee on Inspection Trips of the Local Committee, Montreal, Canada

MONTREAL, the metropolis of Canada, offers a wealth of sanitary works, construction projects, hospitals and kindred institutions and industrial plants for inspection trips. The committee in charge has made arrangements for a number of visits which will satisfy every variety of interest in public health work.

It must be remembered that the city of Montreal is one of the principal historic centers on the continent—it abounds in sites each of which brings to the memory a stirring story of heroism or gallantry. Champ de Mars, Place d'Armes, Jacques Cartier Square —these are places that thousands of tourists come to visit every year. In consequence, the inspection trips will provide a rare opportunity to see in detail historic Montreal, as well as to examine features of particular importance to public health workers.

Bonsecours, the sailors' church, built in 1771 on site of first church erected in 1657. Dozens of tiny ships holding votive lamps, given in recognition of answered prayers for safety, decorate the interior.

It may be recalled too that Montreal constitutes a link between the Old World and the New. French is spoken by the great majority of its citizens, and many features brought back from France have been incorporated into the practice of many of the hospitals, health centers and similar institutions. English practice too finds many proponents in this new-old-world city. As a result, a notable combination of French, English, and American methods will be found in the work of practically all the larger medical and public health institutions, a feature which will prove of exceptional interest to workers in similar fields.

One of the main features to be included in the inspection trips is the Municipal Water Filtration Plant with a total capacity of 250 million gallons per day. The plant employs double filtration for part of the supply, a practice unique in water treatment on this side of the Atlantic. The major portion of the city's water is handled by mechanical gravity filters. These two types of filtration, with their various equipment.

should prove of exceptional interest. Other features of interest to the sanitary engineer will include the construction work in progress on two main sewage collectors of the tunnel type. The novel method of construction used in this work will be well worth inspection. A new incinerator, of the most modern design and just placed in operation, will be visited. And for those interested in milk sanitation engineering, Montreal possesses several modern pasteurization plants, one of which, recently built, is the last word in pasteurization design and equipment.

A variety of municipal health centers, as well as county health units in operation a short distance from the city, may be visited. Here the combination of French and English, as well as American features, with bi-lingual officers and attendants, will be novel to the experience of many in this line of work. It is perhaps not generally appreciated that the Province of Quebec has made amazing progress during the past 5 years in its rapid installation of county health units. No less than 23 such units, to cover 29 counties, have been organized in this short period. A visit to one of these units will show the manner in which the Province hopes to solve its rural health problem.

The laboratory worker will doubtless be interested in the Provincial and Municipal Health Laboratories. The former employs a staff of 35 and is provided with an excellent equipment. It made over 100,000 examinations last year.

Montreal possesses a great variety of hospitals and related institutions—some religious, some nondenominational. Of the French hospitals, the Notre-Dame, the Hotel-Dieu, the Ste. Justine Hospital for Children, will prove of particular interest. The large Montreal General Hospital as well as the Royal Victoria and Montreal Children's Hospitals, ideally located on the slopes of Mount Royal, are well worth a visit. Then there are the Radium Institute, the Sacred Heart Hospital for Tuberculosis and a number of smaller institutions. In addition there are four new hospitals under construction. Some of the larger charitable institutions and asylums, veritable cities in themselves and truly remarkable in breadth of organization and scope of activities, are of a type rarely encountered in cities on this continent. A beautiful side trip by motor will be arranged, if desired, to the Ste. Agathe Sanatorium for Tuberculosis, situated in the Laurentian Mountains.

The statue of Paul Chomedy de Maisonneuve, founder of Montreal, stands on Place d'Armes near the spot where he slew the chief of an invading band of Iroquois.

Among the industrial plants to be visited which may be of interest are the large sugar refineries and the Fleishmann Yeast Plant. And we may not forget the Frontenac Brewery, a type of plant rather foreign to the experience of many of our neighbors on the other side of the boundary line, but which will prove well worth a visit.

ASSOCIATION NEWS

Nominations for the Governing Council

In accordance with the By-laws of the Association the Nominating Committee reports the following nominations for the Governing Council. The Constitution provides that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, providing such petition is received 15 days before the Annual Meeting."

The ten Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting in Montreal will be elected for the three-year term, 1931–1934.

William J. Bell, M.B.,
Deputy Minister of Health,
Toronto, Ont.

Richard A. Bolt, M.D.,
Director, Cleveland Child Health Assn.,
Cleveland, O.

Homer N. Calver,
Asst. Professor of Hygiene,
Univ. & Bellevue Hospital Medical College,
New York University,
New York, N. Y.

Michael M. Davis, Ph.D.,
Julius Rosenwald Fund,
Chicago, Ill.

W. J. V. Deacon, M.D.,
Director, Bureau of Records & Statistics,
State Board of Health,
Lansing, Mich.

Robert D. Defries, M.D.,
Connaught Labs., Univ. of Toronto,
Toronto, Ont.

Harrison P. Eddy,
Consulting Engineer,
Boston, Mass.

W. Brownley Foster, M.D.,
Director of Public Welfare,
Richmond, Va.

Walter S. Frisbie,
U. S. Food, Drug & Insect Control,
Department of Agriculture,
Washington, D. C.

Omer R. Gillette, M.D.,
Health Officer,
Colorado Springs, Colo.

Edward S. Godfrey, Jr., M.D.,
Dir., Division of Communicable Diseases,
State Department of Health,
Albany, N. Y.

Annie W. Goodrich, R.N.,
School of Nursing, Yale University,
New Haven, Conn.

Prof. F. P. Gorham,
Brown University,
Providence, R. I.

Clarence F. Kendall, M.D.,
State Commissioner of Health,
Augusta, Me.

John W. Kerr, M.D.,
U. S. Public Health Service,
Washington, D. C.

W. F. King, M.D.,
State Health Commissioner,
Indianapolis, Ind.

John P. Koehler, M.D.,
Commissioner of Health,
Milwaukee, Wis.

George T. Palmer, D.P.H.,
Director, Division of Research,
American Child Health Association,
New York, N. Y.

George M. Parrish, M.D.,
Health Officer,
Los Angeles, Calif.

Raymond S. Patterson, Ph.D.,
Life Conservation Service,
John Hancock Mutual Insurance Co.,
Boston, Mass.

W. H. Peters, M.D.,
Health Officer,
Cincinnati, O.

John T. Phair, M.B.,
Department of Health,
Toronto, Ont.

Mazÿck P. Ravenel, M.D.,
University of Missouri,
Columbia, Mo.

John L. Rice, M.D.,
Health Officer,
New Haven, Conn.

James Roberts, M.D.,
Medical Officer of Health,
Hamilton, Ont.

William F. Snow, M.D.,
General Director, American Social Hygiene Assn.,
New York, N. Y.

Henry Field Smyth, M.D.,
Laboratory of Hygiene,
University of Pennsylvania,
Philadelphia, Pa.

Stewart G. Thompson, D.P.H.,
Director, Bureau of Vital Statistics,
State Board of Health,
Jacksonville, Fla.

Robert Spurr Weston,
Consulting Engineer,
Boston, Mass.

Anna W. Williams, M.D.,
Research Laboratory,
Department of Health,
New York, N. Y.

CHARLES V. CRASTER, M.D.,
Chairman,
Nominating Committee.

APPLICANTS FOR FELLOWSHIP

HEALTH OFFICERS' SECTION: Seraphin Boucher, D.P.H., Montreal, Que.; Earle G. Brown, M.D., Topeka, Kansas; Willis N. Butrick, Milford, Conn.; Jay Dee Dunshee, M.D., Pasadena, Calif.; Jesse H. Epperson, Durham, N. C.; Cameron St. Clair Guild, M.D., New York, N. Y.; David E. Smallhorst, M.D., Glendale, Calif.; James Stewart, M.D., Jefferson City, Mo.; William B. Wells, M.D., Riverside, Calif.; William F. Wild, M.D., Bridgeport, Conn.

LABORATORY SECTION: Oscar Costa-Mandry, M.D., San Juan, P.R.; W. T. Cummins, M.D., San Francisco, Calif.; Frederick W. Fabian, Ph.D., East Lansing, Mich.; Donald T. Fraser, M.B., Toronto, Ont.; William D. Frost, Dr.P.H., Madison, Wis.; C. A. Perry, Hurlock, Md.; R. V. Stone, M.D., Los Angeles, Calif.; Arthur N. Tasker, M.D., Fort Lewis, Wash.; Joseph C. Willett, D.V.M., St. Louis, Mo.; Verna Willis, M.S., Jefferson City, Mo.

PUBLIC HEALTH ENGINEERING SECTION: Harold A. Young, Los Angeles, Calif.; Ernest William Steel, C.E., College Station, Tex.

CHILD HYGIENE SECTION: Amos L. Beaghler, M.D., Denver, Colo.; Mary Luise Diez, M.D., Boston, Mass.; P. Martin Keller, M.D., Glendale, Calif.; Anastasia Miller, R.N., Sacramento, Calif.; Harry K. Read, M.D., Houston, Tex.

PUBLIC HEALTH EDUCATION SECTION: Edna W. Bailey, Ph.D., Berkeley, Calif.; Mary P. Connolly, Detroit, Mich.; Charles F. Hayes, M.D., Fort Worth, Tex.; Arthur Jordon, M.D., Helena, Mont.; Anne Raymond, New York, N. Y.; James R. Scott, M.D., Albuquerque, N. M.

PUBLIC HEALTH NURSING SECTION: Mrs. Ivah W. Uffelman, Nashville, Tenn.

EPIDEMIOLOGY SECTION: Albert E. Austin, M.D., Sound Beach, Conn.; Jesse H. Crouch, M.D., Helena, Mont.; James A. Doull, M.D., Cleveland, O.; H. W. Hill, M.D., Vancouver, B. C.; A. Clement Silverman, M.D., Syracuse, N. Y.; George M. Stevens, M.D., Los Angeles, Calif.; Ida M. Stevens, Berkeley, Calif.

UNAFFILIATED: John H. Collins, M.D., Schenectady, N. Y.; Frank L. Watkins, M.D., Great Falls, Mont.; Paul L. West, M.D., Wenatchee, Wash.

NEW MEMBERS

The following list includes applicants who have been approved for membership in the A. P. H. A. by the Sub-committee on Eligibility. These new members have requested affiliation with the sections indicated, and action by the Section Council will follow.

Health Officers Section

Margaret W. Barnard, M.D., New York, N. Y., Medical Director, Bellevue-Yorkville Health Demonstration

O. I. Bemis, M.D., Modesto, Calif., Stanislaus County Health Officer

Dr. Thomas M. Berry, Okmulgee, Okla., Supt. of Public Health

Edward R. Davies, M.D., Georgetown, Ky., Director, Scott County Health Dept.

L. G. Eastman, M.D., Hazen, N. D., Supt. of Public Health, Mercer County

Francis E. Gibson, Monessen, Pa., City Health Officer
Aurel Goodwin, M.D., Topeka, Kans., City Health Officer
George N. MacDonnell, M.D., Miami, Fla., Chief, Division of Health
T. J. McNally, M.D., London, Ont., District Officer of Health
H. M. Mosdell, M.D., St. John's, Newfoundland, Chairman, Board of Health
Hon. George H. Murphy, M.D., Halifax, N. S., Minister of Public Health
Fred L. Ogilvie, Caruthersville, Mo., Pemiscot County Health Officer
James E. Pendergrass, M.D., Fresno, Calif., Fresno County Health Officer

Laboratory Section

Koji Ando, M.D., New York, N. Y. (Chief, Bacteriological Dept., Hygienic Inst. of S. M. R. Co., Dairen, S. Manchuria, China) (Assoc.)
M. Jacques Archambault, B.A., C.E., Montreal, P. Que., Chemist, Provincial Bureau of Health
M. Jules Archambault, M.D., Montreal, P. Que., Serologist, Provincial Bureau of Health
Antonio Bolduc, M.D., Montreal, P. Que., Bacteriologist, and Supt., Division of Labs., Dept. of Health
Joseph Felsen, M.D., New York, N. Y., Director of Labs. and Research, Bronx Hospital
Michael Horti, M.D., Woodhaven, L. I., N. Y. (Assoc.)
Luang Siribaed-bisuddhi, C.P.H., Dr.P.H., Washington, D. C. (temporarily), Director of Public Health Labs., Bangkok, Siam (Assoc.)

Public Health Engineering Section

Samuel D. Macready, Hollywood, Fla., Director of Health and Sanitation
Harvey G. Rogers, Minneapolis, Minn., Sanitary Engineer, State Dept. of Health

Industrial Hygiene Section

Sophie Rabinoff, M.D., New York, N. Y., Bureau of Industrial and Adult Hygiene, Dept. of Health

Child Hygiene Section

Eleanor B. McCarthy, B.S., Boston, Mass., Consultant in Dental Hygiene, State Dept. of Health
J. F. Mosher, M.D., Coeymans, N. Y., School Physician

Public Health Education Section

Louise F. Bell, Pasadena, Calif., Chairman, Committee on Health and Sanitation, Women's Civic League
Frances Daniel, Chicago, Ill., Educational Worker, National Food Bureau (Assoc.)
Edith M. Gates, B.A., New York, N. Y., Director, Health Education, National Board, Y. W. C. A.
Dwight G. W. Hollister, B.B.A., Babson Park, Mass. (Assoc.)
Dr. William D. Moore, San Pedro, Calif., City School Physician (Los Angeles)
Robert L. Nourse, M.D., Boise, Idaho, Public Health Adviser, Dept. of Public Welfare
R. R. Rosell, Chicago, Ill., Educational Worker, National Food Bureau (Assoc.)
Mildred L. Tuttle, R.N., Nashville, Tenn., Instructor, Health Education and Nursing, Peabody College

Public Health Nursing Section

Lalla M. Goggans, R.N., Jacksonville, Fla., Staff Nurse, State Board of Health
Mary Harrigan, R.N., Detroit, Mich., Territorial Supv., Metropolitan Life Ins. Co.
Mrs. Condon W. Taylor, R.N., Nashville, Tenn., Field Nurse, State Dept. of Public Health

Unaffiliated

John M. Flude, M.D., New York, N. Y., Field Representative, American Society for Control of Cancer

DECEASED MEMBERS

George M. Kober, M.D., Washington, D. C., Elected Member 1896, Fellow 1922
Mrs. Herman M. Biggs, New York, N. Y., Elected Member 1926 (Assoc.)
Horace G. Dunham, M.D., Dover, N. J., Elected Member 1926
Edgar B. Kay, Washington, D. C., Elected Member 1928
Anne McFarland Sharpe, M.D., Tallahassee, Fla., Elected Member 1927
Col. Gustave R. Tuska, New York, N. Y., Elected Member 1915
William E. Warren, M.D., Williamston, N. C., Elected Member 1920
Ennion G. Williams, M.D., Richmond, Va., Elected Member 1905

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

Health Survey of Washington—A study of health and hospital service has been made in Washington, D. C., by the staff of the American Public Health Association with the aid of other agencies. On the basis of the *Appraisal Form*, this city scores 725.6. The effort of the Health Department contributes 73.7 per cent of this total, while 14.8 per cent is due to other official agencies, and 11.5 per cent is due to the efforts of voluntary agencies.

The health department rates 87 per cent in its vital statistical service. There are deficiencies in the analysis and graphic presentation of facts and it is recommended that a trained statistician be employed with suitable personnel and that there be installed mechanical devices for the analysis of data.

All of the acute communicable diseases are well reported with the exception of typhoid fever. The number of children protected against diphtheria is comparatively small but vaccination of school children against smallpox is compulsory. There is need for a continuous and vigorous diphtheria protection campaign. There is also need for additional trained public health nurses to replace medical inspectors who should be used only for diagnostic service.

There is need of effort to increase the reporting of venereal infection and the tracing of sources of infection among clinic cases. There should be a full-time director of the tuberculosis service with an extension of medical, nursing, hospital, and preventive services.

Washington scores 86 per cent in maternal hygiene work but only 66 per cent in infant hygiene, where material increases are needed in medical and nursing personnel.

School health service is a joint function of the Health Department and the Board of Education. The number of medical inspectors, school nurses, and dental inspectors should be increased in order to provide a thorough medical examination of all children entering public school for the first time, and of children in the fifth or sixth grades, and to enable the nurses to encourage the mothers to bring a large number of children with defects to professional attention.

The rating for food and milk control is 87 per cent, while the sanitation activities have the highest rating of any division of the department with a score of 92 per cent.

Funds and personnel should be provided to make possible a popular health instruction bureau in the health department.—*Health and Hospital Survey of Washington, D. C.*, Washington Council of Social Agencies, 1931.

Rural Health in Missouri—Contagion and nutritional deficiencies have increased in the drought areas of Missouri. This is especially true of typhoid fever. Scurvy, pellagra, and rickets have been reported to be more prevalent. Nutritional disturbances may lead to an increase in the prevalence of tuberculosis.

With the coöperation of the U. S. Public Health Service, funds became available in February, 1931, for the establishment of a division of coöperative rural health work in the State Health Department. The plan contemplates the establishment of five rural health districts south of the Missouri River, each under the supervision of a full-time trained district health officer,

assisted by a public health engineer, nurses, and laboratory technicians.—James Stewart, State Health Commissioner, Missouri's Efforts to Protect Health of Rural Inhabitants, *United States Daily*, May 29, 1931.

Examination of Domestic Servants in Newark, N. J.—The Health Department, having successfully required a semiannual examination of food handlers for several years, concluded that it would be possible, and undoubtedly valuable, to extend this work to include a similar requirement for domestic servants where intimate contact with the family is certain. Accordingly, an ordinance was adopted September 1, 1930, requiring a certificate of health from a physician for each domestic servant, indicating that the individual has been found free from tuberculosis or any other communicable disease. The certificate is submitted on blanks supplied by the Newark Health Department and is good for a period of 6 months. Upon receipt of the certificate, the Health Officer issues a food handlers' card. The ordinance further states that any domestic servant desiring to conform to the provisions of the ordinance may be examined by a physician connected with the Newark Health Department without charge.

The law is administered in much the same manner as the food handlers' ordinance with the exception that enforcement is a function of the sanitary rather than the food division of the Health Department. The physical examinations are made by physicians in the tuberculosis division.

During the 8-month period following the adoption of the ordinance, there have been examined 2,196 domestics, of whom 2,107 were females. Of this number, 1,382 were colored and 814 white. There were 1,769 housekeepers and houseworkers, 151 cooks, 25 nurse maids, and 251 in a miscellaneous group. This is considered a fairly satisfactory start as it is realized that the numbers will increase steadily as the public, through constant publicity, becomes familiar with the ordinance. It is understood, of course, that the 25 nurse maids represented but a fraction of the thousands of individuals employed in this type of service. It is the intention of the Health Department to seek wilful offenders and bring them to court with the belief that the subsequent publicity will increase the number of applicants for examination.—Charles V. Craster, Health Officer, Newark, N. J., July, 1931.

Variable Scarlet Fever Quarantine—Following a 5-year study of the incidence of secondary cases in scarlet fever, the Detroit Department of Health has adopted a variable quarantine period for scarlet fever based not only upon the clinical condition of the patient but also upon age and weather. In the past, a simple case of scarlet fever was quarantined for 28 days while the complicated case was held for a maximum of 56 days. The new regulations provide for a 21-day quarantine for patients 15 years of age and over, while children below this age are still held for 28 days. Also, during the warm months of July, August, and September, the quarantine period at all ages is reduced to 21 days, as the infecting case rate during this period has for the past several years been less than 1 per cent. In complicated cases at the end of 28 days the quarantine is removed and a warning placard restricts the case until termination of the period of isolation.—*Weekly Health Review*, Detroit Dept. of Health, June 27, 1931.

LABORATORY

JOHN F. NORTON, PH. D.

A TWO–PHASE AND THREE–PHASE AUTOMATIC INOCULATOR FOR BACTERIOPHAGE WORK

FRED O. TONNEY, M. D., F. A. P. H. A.

Bureau of Laboratories and Research, Department of Health, Chicago, Ill.

THE two types of apparatus described were improvised to avoid the necessity of manual inoculations at night, in obtaining successive generations of young cultures for bacteriophage studies. The smaller device with the single alarm clock provides a second generation culture ready for morning use, and the larger one with the double clock attachment gives a third generation culture.

The age of the culture is fixed by setting the alarm hands of the clocks at any time desired. The time gained by having young cultures ready in the morning is often of material aid in the day's work.

The parts required to be sterilized are easily detached at the hose connections. They are made up and prepared a number at a time, cotton plugged at all open ends, wrapped in paper, sterilized and kept ready for use.

PARTS

1. The alarm clock, Figure 1, is of the ordinary type, but should have an alarm spring of ample strength. It is fitted with an extension wing of heavy tin 1¼" wide, attached by screws to the alarm winding stem (a) and a horizontal shelf of tin 1¼" wide screwed to the body of the clock (b). Before this shelf is attached the alarm stem should be wound to its full tension. When in use, the alarm hand is set in the usual way and when the alarm rings the winding stem moves downward until stopped by the horizontal shelf, thus acting as a lever to compress a rubber bulb placed upon the shelf. In purchasing the clock, one having a short margin time for setting the alarm should be selected.*

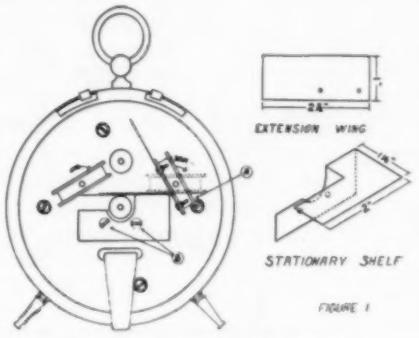


FIGURE 1

ATTACHMENT OF COMPRESSION DEVICE

2. The inoculating pipette, Figure 2, consists of a combination T tube and U tube of ordinary 6 mm. glass tubing with a rubber bulb (3 to 5 c.c.) on one end and an air vent of rubber tubing compressed by a screw clamp on the projecting arm. The pipette is most simply made from an ordinary T tube by bending one arm to form a shallow U and drawing out the distal end to a tip which is then bent downward at an angle. A small safety bulb may be blown in the tube next to the U if desired.

3. The T tube, Figure 3, of 6 mm. tubing fitted at one end with a larger bulb (5 or 10 c.c.) and an air vent of rubber tubing and screw clamp on the projecting arm.

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* To illustrate: If the alarm hand is set at 4 A.M. the alarm lever can usually be moved from the "silent" to the "ringing" position after 4:30 P.M. the previous evening, without tripping the alarm. Some clocks, however, require a margin of as much as two hours in the setting time. The most serviceable clock is one having a time margin of ½ hour or less. A watch-maker can usually readjust the mechanism to give a shorter time margin.

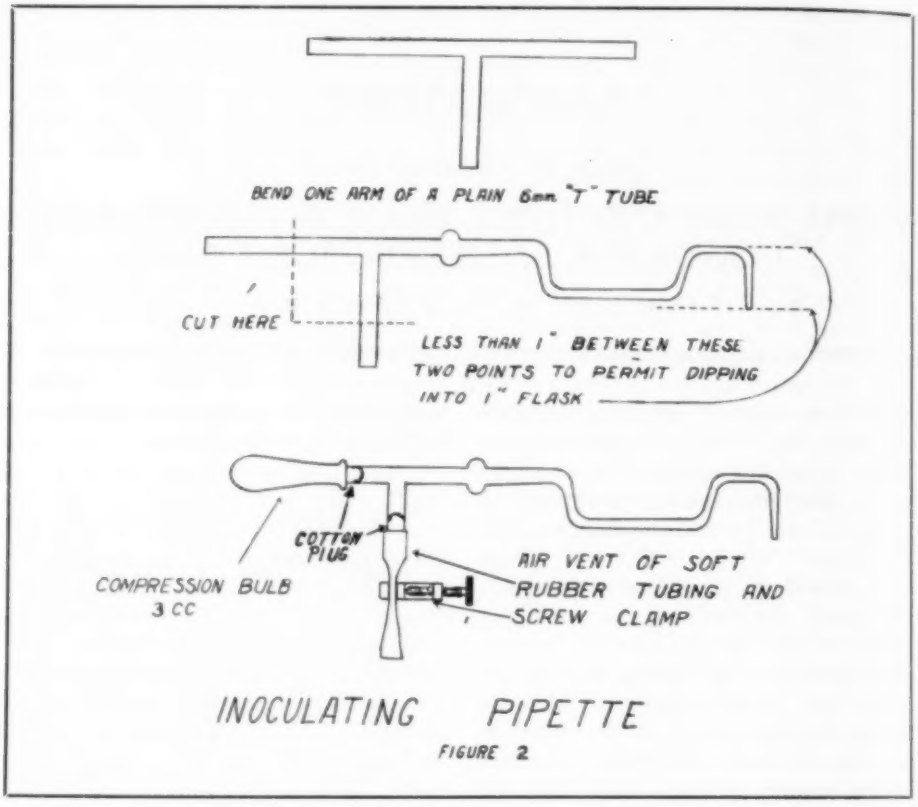

BEND ONE ARM OF A PLAIN 6mm "T" TUBE
CUT HERE
LESS THAN 1" BETWEEN THESE TWO POINTS TO PERMIT DIPPING INTO 1" FLASK
COTTON PLUG
COMPRESSION BULB 3 CC
AIR VENT OF SOFT RUBBER TUBING AND SCREW CLAMP
INOCULATING PIPETTE

FIGURE 2

4. A standard U tube, Figure 4, of any size desired (a) with side arms. To one arm is connected, by means of rubber tubing, a small delivery tube with a narrowed tip, bent at a right angle (b).

5. Several solid rubber stoppers to fit the standard U tube, Figure 4 (a).

6. A small ring stand, small clamp and clamp holder.

THE SINGLE INOCULATOR

The single device consists of a clock and an inoculating pipette, Figures 1 and 2. The complete assembly is shown in Figure 6.

The steps of the technic of preparation are as follows:

1. Wind the clock and set the alarm hand at the inoculating time desired. Turn alarm lever to "silent."

2. Place clock and all unassembled parts in the incubator for 1 hour to warm; include a small flask of sterile broth to be inoculated at the outset.

3. After warming, unwrap the sterile inoculating pipette, attach the bulb and vent, leaving the cotton plugs in the tubes. Open the vent; see Figure 6.

4. Inoculate the warmed flask of broth with a culture of the organism to be used. The mouth of the flask should be wide enough to admit the inoculating pipette (about 1").

5. Dip the inoculating pipette into the flask just inoculated and draw up enough fluid to fill the U, controlling the manipulation by pinching or releasing the opened vent with the fingers. Remove the pipette from the flask to a horizontal position and adjust the fluid in the U tube to the amount desired by again manipulating the bulb and opened vent. In the same way blow out the last drop from the tip.

6. Now flame the tip thoroughly until it is completely dry and sterile inside and out (keep vent open).

7. Insert the sterile tip beside the cotton plug of a second flask of sterile broth (keep vent open).

8. Assemble the outfit in the incubator, placing the bulb between the compression arms of the clock (vent open).

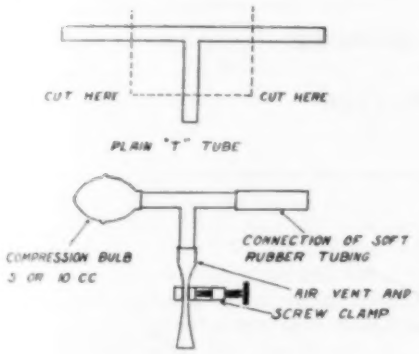
9. Allow the outfit to warm one-half hour;

then set the alarm lever to ring, close vent and leave the apparatus in the incubator over night.

The first phase of growth occurs in the inoculating pipette. When the alarm rings the flask of broth is inoculated from the contents of the pipette and the second phase of growth begins.

THE DOUBLE INOCULATOR

The double device consists of two alarm clocks, Figure 1; one inoculating pipette with bulb and vent, Figure 2;



THE "T" TUBE

FIGURE 3

one plain T tube with bulb and vent, Figure 3; one standard U tube, Figure 4 (a); with delivery tube, (b). The standard U tube is previously filled with broth to about ½" below the side arms; it is then cotton plugged and sterilized with the delivery tube, Figure 4 (b), in place but protected by a paper wrapping. Just before use, the cotton plug farthest from the delivery tube is replaced by a tightly fitting sterile rubber stopper. Assemble the apparatus as shown in Figure 5.

TECHNIC OF PREPARATION

1. Wind the clocks, set the alarm hands at the desired hours, as 10 P.M. and 4 A.M. Turn the alarm levers to "silent."

2. Place both clocks and all the unassembled parts in the incubator for about an hour to warm. Include also a small flask of sterile broth to be inoculated at the outset (g).

3. After warming, fasten the standard U tube (a) of sterile broth rigidly to a small ring stand by means of an adjustable clamp and clamp holder. Turn the cotton plugged arm forward (the one next to the delivery tube) and replace the rear cotton plug with the sterile rubber stopper.* See that the U tube is filled to within ½" below the side arms. Tip the forward arm downward until the level of fluid is just below the outlet to the delivery tube.

4. Assemble the apparatus around the U tube (a) and stand as in Figure 7 (all vents open).

Thus:

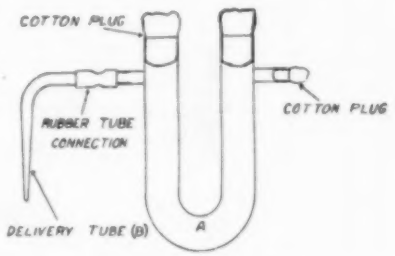
1. The sterile delivery tube (b) of the U tube is unwrapped, flamed and inserted beside the cotton plug of a second flask of sterile broth (c) for the final inoculation of the series. Caution: The tip must be kept dry. A drop of fluid in it will block the siphon, which operates when the clock rings.

2. To the side arm of the U tube opposite the delivery tube is connected the T tube (d) with vent and bulb (e), the cotton plug in the side arm being left in place.

3. The bulb (e) is placed between the compressor arms of clock No. 2, at the right of the stand.

4. The previously warmed flask of sterile broth (g) is now inoculated with the organism to be used, and shaken.

5. From the flask just inoculated, a sterile inoculating pipette (f) is filled by dipping the tip into the flask (g), drawing the fluid into the U, withdrawing the pipette and adjusting the amount retained by manipulating the bulb and opened vent.

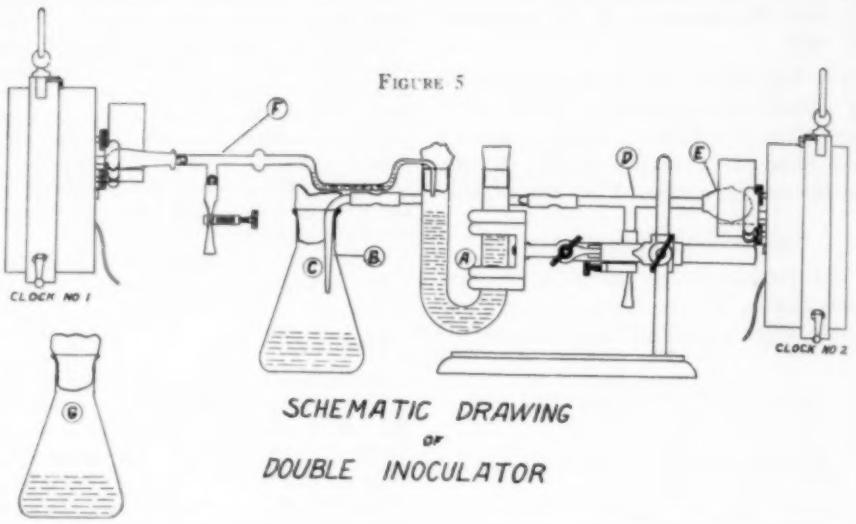


STANDARD "U" TUBE

FIGURE 4

* The rubber stopper must be tight. It forms the seal of the compressor device, which holds the positive pressure to start the siphon, and the negative pressure to stop it.

FIGURE 5



SCHEMATIC DRAWING
OF
DOUBLE INOCULATOR

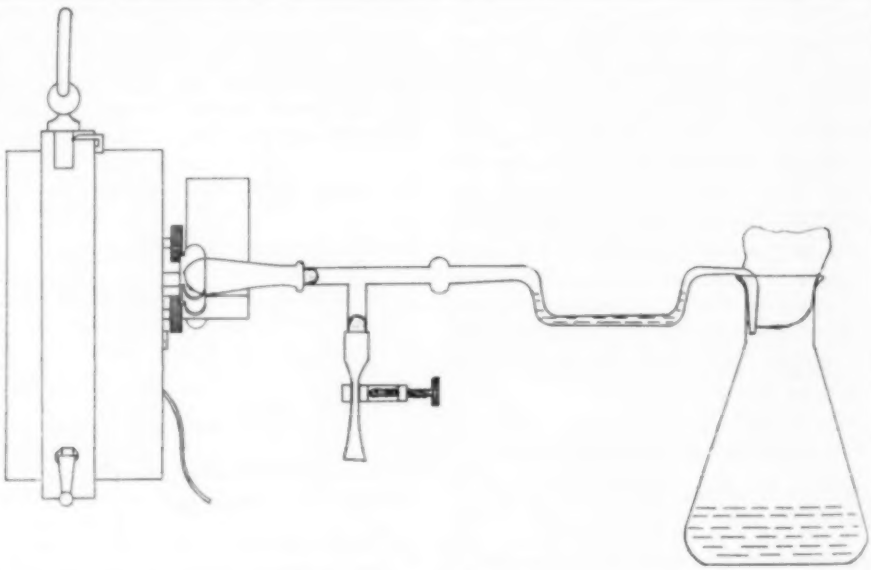
6. Flame the tip of the inoculating pipette thoroughly until dry and sterile and insert it beside the cotton plug of forward arm of the U tube (a) (vent open).

7. Place the bulb end of the inoculating pipette (f) between the compressor arms of clock No. 1, which is placed to the left and to the rear of the stand, beside clock No. 2 for economy of space (vent open).

8. Place completely assembled outfit in the incubator (all vents open) and allow to warm for one-half hour.

9. Set alarm levers to ring, close vents tightly, tighten rubber stopper at (a) securely, and leave apparatus in the incubator over night.

10. Go to bed and sleep with confidence. The third generation culture will be ready for you in the morning.



SINGLE INOCULATOR

FIGURE 6

The first phase of growth occurs in the inoculating pipette (f) as in the single inoculator. The second phase begins in the standard U tube (a) when clock No. 1 rings. The third takes place in the flask (c) beginning when clock No. 2 rings, usually at 3 or 4 A.M., and gives rise to the desired third generation culture for morning use.

Arrangements have been made with the Central Scientific Company, Chicago, to furnish the essential parts and complete assembly ready for use.

KEEPING QUALITY OF KAHN ANTIGEN AFTER CHOLESTEROLIZATION

FANNIE MAE FRANK

Laboratories of Alabama State Board of Health, Montgomery, Ala.

KAHN[1] recommends that antigen, after the cholesterol has been added, be not used after 2 months. It has been our practice to adhere strictly to this procedure and discard any cholesterolized antigen more than 2 months old. Since the antigen is prepared in the Central Laboratory for use in 8 branch laboratories, this practice involves considerable waste, even though the needs of each laboratory are anticipated as carefully as possible.

In Table I are given the results of parallel tests with freshly cholesterolized antigen and several lots to which cholesterol had been added from 1 to 2 years before the tests. It seems apparent that the cholesterolized antigen is entirely satisfactory for periods of at least 1 year.

TABLE I

Antigen	Age	No. of Tests		Disagreement
3 F	2 years	106	1	(2+ with 3 F; negative with 10 C)
4 A	2 years	116	2	(negative with 4 A; neg. Kolmer test)
7 A	18 months	90	0	
9 B	12 months	98	0	
Total		410	3	

REFERENCE

1. Kahn, R. L. *Serum Diagnosis of Syphilis by Precipitation*, 1925, p. 133.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Traffic Accidents in Tokyo, 1930—With the remarkable increase in the number of motor cars in Tokyo, street accidents occurred so frequently that in 1930 deaths and injuries averaged 47 every day. According to the statistics of the Metropolitan Police in Tokyo, during last year there were 28,953 accidents, 17,062 of which resulted in the death or injury of the victims.

There were 17,124 motor car accidents, with 8,890 persons killed or injured; 6,205 bicycle accidents, with 4,504 persons injured or killed; tramway cars were the means of 2,929 accidents and 1,386 persons injured or killed. Accidents of motorcycles have been increasing year by year, the number of deaths during 1930 being more by 150 than the number for 1929. The total number of motorcycle accidents in 1930 was 1,298, with 892 injuries and deaths.

Pedestrians were the means of 558 accidents with 538 resulting injuries and deaths. According to the new regulation published last year, the injured pedestrians are to be punished in case they induce the accidents through their own carelessness.—*J. A. M. A.*, 96: 1968 (June 6), 1931.

Vital Statistics for Michigan, 1930—Final figures for 1930 show Michigan to have achieved two record rates, the lowest death rate and the lowest infant mortality rate in the history of the state. Moreover, the maternal mortality rate was one of the three lowest in Michigan's history.

There were 51,561 deaths in Michigan during 1930, equivalent to a death rate of 10.6 per 1,000 population. This compares with the preceding 4 years: 1929 and 1928 with a rate of 11.9, 1927 with a rate of 11.3, and 1926 with a rate of 12.4.

In spite of the increase in the state's population, there were 4,556 less deaths than in 1929. There were 6,217 deaths of children under 1 year of age in Michigan in 1930, which is equivalent to an infant mortality rate of 62.9 per 1,000 live births. The rate in 1929 was 66.9. A generation ago, in 1900, this rate was 157.1. This makes the rate for 1930 only about 40 per cent of what it was 30 years ago.

There were 584 deaths in Michigan in 1930 from puerperal causes, which gives a maternal mortality rate of 5.9 per 1,000 living births, compared with 6.3 in 1929. This was bettered only by the rate of 5.7 in 1912, and 5.8 in 1916. The maternal mortality rate in 1900 was 10.3, a reduction of almost one-half in 30 years.

Michigan's birth rate for 1930 fell from 20.9 per 1,000 of population in 1929 to 20.4 in 1930. There were 98,882 births, 187 more than in 1929, but not a sufficient gain to hold the rate in the face of the increase in population. Comparison of the birth rates for the past 5 years shows a steady decrease in birth rates, from 22.5 in 1926: 22.3 in 1927; 21.2 in 1928; 20.9 in 1929; to the 1930 birth rate of 20.4. This falling birth rate is by no means peculiar to Michigan. Advance reports from various states indicate that a number of them will show a rate under 20 for 1930.—*Michigan Public Health*, 19: 75 (Apr.), 1931.

The Health of Ceylon, 1929—With an estimated population of 4,750,000, the birth rate of Ceylon in

1929 was 36.8 per 1,000 population; the death rate 24.9; and the infant mortality rate 183 per 1,000 births. While Ceylon is particularly unaffected by outbreaks of insect-borne disease, it is greatly troubled by malaria. In Colombo alone, in 1929, 3,268 cases of malaria were admitted to the general hospital, 154 of these proving fatal. Cholera was responsible for 28 cases and 23 deaths, giving a fatality rate of 82.1. Eighty cases of plague occurred, of which 40 were in Colombo. Probably the greatest scourge of all, however, is hookworm disease. No less than 178,000 cases were treated in dispensaries, and 12,129 in hospitals; while the total number of deaths registered from hookworm disease was 2,172 for the island.

The total number of deaths in the last 5 years has not diminished, though it would appear that in certain districts the ankylostomiasis campaign is beginning to show results, as it is reported that the wards in hospitals in these districts are now almost empty. When it is considered that the bulk of the Asiatic population goes about barefooted, and that latrines, except in Colombo and some of the towns, are, if existent, but sparsely used, it is not surprising that it is difficult to reduce the incidence of this disease. Dental caries was found to be the most common ailment of the school children in Ceylon; and following this ailment, the next in importance was hookworm disease.—*Pub. Health,* 44: 243 (May), 1931.

Vital Statistics for Spain, 1930—According to provisional figures from the office of chief of statistics in Spain, there were 660,735 live births, and 394,355 deaths from all causes in 1930, resulting in a natural increase of 266,380 persons. Figures derived from 50 Spanish provinces, showed the birth rate for 1930 to be 29.03 per 1,000 population as against 28.92 in 1929, with a stillbirth rate of 31.9 per 1,000 births, as compared with 31.4 in 1929. The rate for deaths from all causes was 17.33 per 1,000 population as against 18.03 in 1929. The infant mortality rate of 117 deaths of infants under 1 year of age per 1,000 live births shows an improvement over the 1929 figure of 123.

Among the diseases which showed a marked decline in mortality in 1930, the reduction in the death rate from all forms of tuberculosis was most striking—from 136.3 per 100,000 population in 1929 to 126.9 in 1930; pulmonary tuberculosis declined from 111.3 in 1929 to 103.3 in 1930. Pneumonia declined from 43.0 (1929) to 40.1 (1930); other diseases of the respiratory system, from 160.0 to 144.5; meningitis from 49.0 to 44.7; and organic diseases of the heart from 168.9 to 160.9. As contrasted with these reductions in death rates, the rate from cancer in Spain increased from 70.0 in 1929 to 72.3 in 1930; cerebral hemorrhage and softening of the brain showed an increase from 124.8 in 1929 to 125.7 in 1930; appendicitis and typhlitis, and cirrhosis of the liver showed slight increases, with rates in 1930 of 3.3 and 16.2 respectively.

Though there was a slight reduction in the death rate from typhoid fever, this disease caused 16.4 deaths per 100,000 population, in 1930. The death rate for diarrhea and enteritis under 2 years of age was 34.9 per 100,000 in 1930 as compared with 35.6 in 1929. Preliminary figures for deaths from suicide showed a death rate of 3.7 and violent deaths, excepting suicide, a rate of 29.—*Revista de Hygiene e Saude Publica,* 5: 195 (May), 1931.

Smallpox in the United States and Canada, 1930—Analysis of the reports received from 44 states, the District of Columbia and 6 Canadian provinces shows that there was a marked increase

in the incidence of smallpox in the United States, in 1930, but a decided decrease in the prevalence of this disease in Canada. There was recorded, in each country, a rise in the case fatality rate. Fortunately, however, the areas in which increases occurred were those in which there was a relatively low incidence of the disease.

Among the cities of the United States many had enormous smallpox sickness rates in 1930. In Waterloo, Ia., and Cleburne, Tex., there were 1,145 and 1,109 cases, respectively, per 100,000 population. Other very high rates prevailed in Davenport, Ia. (1,060); Ottumwa, Ia. (677); Sioux Falls, S. D. (594); Aberdeen, Wash. (566); Spokane, Wash. (543); Muncie, Ind. (490); Phoenix, Ariz. (453); New Philadelphia, O. (453). Rates between 300 and 400 were recorded for Quincy, Ill.; Des Moines, Ia., and Lima, O.

The rise in the prevalence of smallpox in the United States from 38,281 cases, in 1929, to 44,544 cases, in 1930, indicates a serious situation. But, disturbing as these figures are, their full significance is revealed only when it is realized that over 43,000 (97 per cent) of the 1930 cases occurred in states whose population aggregated but 54 per cent of the total population of the country. These states, in large part, are those in which anti-vaccination propaganda has been most active. In 2 states, Indiana and Ohio, there were reported over 5,000 cases each. California, Illinois and Iowa each reported over 3,000, and Kansas, Michigan, Oklahoma and Washington each had over 2,000 cases.

These figures may be compared with those reported by New England and the Middle Atlantic States, areas in which public support of the constituted health authorities for vaccination has been most responsive. Here, the country's most thickly populated region, a condition conducive to active propagation of the disease, it is found that, among a population of approximately 37,000,000, there occurred only 479 cases and 2 deaths from smallpox, in 1930. To appreciate the full significance of these figures, one has but to realize that, if conditions in this area had been the same as those existing in Indiana, for example, there would have occurred 60,526 cases instead of a mere 479. Or, to put the matter in another light, if the 29 states with higher prevalence had been as active in their efforts to control the disease as were those of the North Atlantic Seaboard, there would have occurred only 860 cases instead of 43,361.

This condition is clearly indicative of the efficacy of vaccination as a preventive of smallpox. Where vaccination and revaccination are neglected, smallpox flourishes; in communities that are well protected, cases and deaths are rare, indeed.—Met. Life Ins. Co., *Stat. Bull.*, 12: 3–5 (May), 1931.

The Homicide Record of 1930 in the United States—During the last 31 years, the homicide death rate for 31 American cities with a collective population of nearly 25,000,000 in 1930 increased from 5.1 per 100,000 in 1900 to 10.9 in 1930. The rate during this period reached a first maximum of 11.3 in 1925, which is the highest figure on record or a little above the record for 1930. The homicide death rate for 147 cities which in 1930 had a population of over 39,000,000 increased from 10.4 per 100,000 in 1929 to 11.0 in 1930, the rate increasing in 73 cities, decreasing in 61, and remaining the same in 13.

The rates for individual cities in this group show wide variations. There were none in Lawrence, Lynn, Manchester, Pittsfield, Quincy, Salem, Somerville, Fitchburg, Gloucester, and Holyoke, Mass.; nor in Lincoln, Neb.; Newport and Pawtucket, R. I.; Union

City, N. J.; nor in Elmira and Mount Vernon, N. Y.

In 14 cities, which report comparable records for 1928, 1929 and 1930, the homicide rate exceeded 30 per 100,000. Of these, 12 are in the South, repeating in many cases the extremely high homicide death rates in that part of the country.

The highest rate for American cities is maintained, as usual, by the city of Memphis, Tenn., the rate having been 58.8 per 100,000 for 1930 as against a rate of 51.6 for the preceding year. With regard to Memphis, the fact must not be overlooked that the exceptional hospital facilities of that city attract patients from the surrounding country, which tends to exaggerate the local homicide death rate. But even when allowance is made for this fact, on the basis of a careful study of residents and nonresidents, the local rate still continues extremely high. During the year 1929, for example, out of 127 deaths from homicide in Memphis, 74 were residents and 53 nonresidents, making the death rate for residents in Memphis 30.9, or approximately three times the general rate for American cities. The next highest rate, 52.6, is for Atlanta, Ga., followed by Lexington, Ky., with a rate of 52.4.

In the 5 largest cities of the country, the number of homicides increased from 1,333 in 1929 to 1,425 in 1930. In these cities, the highest rate for 1930 (14.4 per 100,000) occurred in Chicago, followed by Detroit with a rate of 13.3; Philadelphia with 7.7; New York with 7.1; and Los Angeles with 6.6. The United States homicide death rate is by far the highest for any civilized country in the world. The rate for Germany for 1927 was 2.0, showing a constant decline since 1920; that for Austria was 3.0; that for Hawaii for the period 1920–1930, 8.5; and that for England and Wales in 1929, only 0.5 as against a rate in the U. S. Registration Area of 8.5 per 100,000 for the same year.

The outstanding crime problem in America imperatively demands drastic restrictions in the sale and possession of concealable weapons. Approximately three-fourths of the murders in the United States are committed by firearms. In the State of Massachusetts, where the firearms law is reasonably well enforced, the murder death rate is relatively low, as shown by the fact that out of the sixteen cities showing no deaths from homicides in 1930, 10 were in Massachusetts. In New York City, out of 219 homicides, 52.1 per cent were caused by firearms; while in Memphis, Tenn., out of 127 homicides, 76.8 per cent were caused by firearms. —Frederic L. Hoffman, The Homicide Record of 1930. *Spectator*, 126: 9 (Apr. 9), 1931.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

A MECHANICAL AID FOR ISOLATING *B. COLI*

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IN plating out lactose splitting organisms on eosin methylene blue plates to determine characteristic *B. coli* colonies, the water laboratory of the Bureau of Engineering, Florida State Board of Health, was seldom able to pick up isolated characteristic colonies due to overgrowths. It was suspected that organisms in the water which split lactose after 18 hours' incubation at 37½° C. included *B. coli*, but the problem was how to prevent the overgrowths so that this suspicion could be definitely confirmed.

An old Victor hand wound disk phonograph was obtained and the felt protecting the turntable and centering pin removed. Then a 4¾" diameter "New Daisy" rubber sink stopper was cemented to the turntable at the center. This rubber stopper was shaved down to make a flat resting surface for a petri dish. Next a 2½" ruby eraser was cut into cubes about ⅛" to ¼" high. The petri dish resting on the sink stopper was centered on the turntable and the small cubes cemented to the stopper around the periphery of the dish, allowing about 9 of these guides for 9" of the dish's perimeter and an open space of about 2" for placing and removing the plate. The turntable speed was adjusted to about one revolution per second when the machine was fully wound up.

The procedure of use of this revamped talking machine is as follows: Wind up the phonograph, insert the eosin methylene blue plate, numbering it to coincide with the sample and dilution number, have at hand the fermentation tube and the platinum needle, flame both the

tube and the needle, remove the cotton plug, insert the needle into the fermented broth, reinsert the plug and return the tube to the rack. Then open the brake on the phonograph turntable so that it starts, remove the petri dish cover and hold the broth coated needle at the center of the petri dish for about two revolutions, then slowly push the needle in a straight line toward the edge of the petri dish. In this operation the needle rests lightly on the media without turning. When the needle hits the edge of the plate, lift it, permitting the wrist to stop the turntable, then replace the cover of the plate and remove it.

The needle must have a slight bend

upward at its end so that it will slide over the media as a spoon would. About ten revolutions of the turntable

are made while the plate is being streaked and the time necessary to complete the streak done as above indicated is about 23 seconds. Isolated colonies are easily picked off around the edge of the plate as shown in the photograph. The only disadvantage to this scheme is that a separate plate must be used for each lactose broth portion showing gas.

Dr. Paul Eaton, Director of the Diagnostic Laboratories of the Florida State Board of Health, suggested this idea but it was developed by Lena W. Starck, analyst of the Bureau of Engineering, to such a point that it is now routine procedure. The number of plates positive for *B. coli* as determined by reinoculation of characteristic colonies in the lactose broth has increased considerably over the former results.

The idea of turning the plate mechanically was suggested in the *Journal of Bacteriology* some years ago, but the phonograph is more easily obtainable than the means suggested in that article.

THE BECCARI SYSTEM OF GARBAGE DISPOSAL IN FLORIDA

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THE Beccari system of garbage disposal originated in Italy some years ago and had its first application in this country at Scarsdale, N. Y. Briefly, the system takes advantage of the natural decomposition of organic wastes, this action taking place in closed cells. The cells are usually concrete but may be of brick or vitrified tile. In about 35 to 40 days the garbage which has been placed in a cell has been reduced to an inodorous humus with a loss of weight of about 85 per cent.

The second plant built in this country was at Dunedin, Fla., which was followed closely by a plant at Belleair, Fla. Both of these plants were constructed after successful experiments with a very small single cell built at Belleair and filled with garbage which included fish-house wastes and an unusually large amount of citrus wastes. Additional plants have also been built at South Jacksonville and Plant City while an experimental cell was built by the National Juice Company at Tampa for the reduction of citrus wastes.

The plant at Dunedin is a 5-cell concrete structure, each cell of standard size 9′ x 8′ x 6′ 6″, and holding about 18,000 lb. of raw garbage. Garbage is placed in layers on wood racks 24″ center to center. The tops of the cells slope and the entire lid must be lifted to place garbage in the cells. These

lids are necessarily very heavy and are counter-weighted to facilitate lifting. In addition a corrugated iron building houses a grinder and storage for the ground humus. The entire cost of the plant was $4,500. The former method of disposing of garbage and trash was to burn it and rake the residue over into a pond. The dump cost the city $24.80 per month for labor and $30.00 per month for oil and disinfectants. Since the installation of the Beccari plant at the dump, trash is still burned there. However, the monthly cost of operating both the Beccari plant and the dump is $5.20 per month which takes in all items, including fuel for the gas engine which operates the grinder. The city manager has estimated the cost per ton of humus produced at $2.62, while the return has been $22.50 per ton and the demand for it greatly exceeds the supply.

No nuisance has resulted at any time from the operation of this plant. On the contrary fly and rat breeding have been eliminated as well as scavenging by buzzards and the production of odors by burning garbage.

The Belleair plant was adapted to the peculiarities of the community which has a year round population of 250 and a winter population of 2,500. Eight cells were built equivalent to three standard cells. The construction was of vitrified tile and light hatches for charging the cells were built in place of the heavy over-all lids of the Dunedin plant. Likewise the racks in the cell were made of 1″ x 3″ cypress in place of 2″ x 4″ strips used at Dunedin. Trash is burned as formerly but with no nuisance as formerly. The amount of humus from this plant is small, about 7½ tons annually, and is used locally for park purposes. A ready sale is found for any surplus.

The South Jacksonville plant is a standard-cell concrete structure, 21 cells in all, serving a population of 5,600. To take care of trash a small incinerator was built at a cost of $400. Operation costs are about the same as formerly when a dump was operated but the use of oil and disinfectants has been eliminated. A small brick building houses the grinder and motor and provides storage for sacked humus. Trucks are driven on a ramp between the two rows of cells and dumped sidewise through steel hatches into each cell. The cells are discharged beneath the ramp. Although there are many houses immediately surrounding the plant, there are no complaints of odors.

The Plant City plant is a 10-cell structure of concrete. This plant uses outside ramps on each row of cells for charging through hatches. The cells are discharged inside the building covering the plant, which also houses grinder and motor, provides storage for humus, and also storage for sanitary department equipment. The cost of this plant was $7,081.74, complete.

The cell built by the National Juice Company at Tampa was to experiment with citrus wastes including rag and peel. Lime was added to counteract the acid in the waste and the results were excellent.

Generally speaking the Beccari plants in Florida have proved themselves to be ideal methods for disposition of the garbage. The cost is comparable with that of incinerators and the product is salable with the demand exceeding the supply. There are no nuisances from flies or vermin, and the odorless process of decomposition has enabled the cities to place their plants much closer to thickly settled areas with no complaints. The result has been a material saving per ton-mile of garbage hauled and in the cases where this saving has been accomplished, the residents have secured better garbage collections through more frequent service.

The life of tires has been increased materially through the elimination of

roads littered with cans, broken bottles and abrasive materials. The separation of trash and garbage has caused an additional small revenue to the city treasuries through the recovery of junk, bottles, rags and paper which were formerly dumped and burned or buried.

The sale of humus has made it possible for the cities to get some interest on their investments and there is a ready demand for the product which has excellent fertilizer properties. The humus as it comes out of the cells is dry although it retains its original shape and weighs but 15 per cent of the original charge of raw garbage. It is easily ground and when sacked may be stored away without nuisance. A slight odor of ammonia is noticeable when the cells are first opened.

Separation of garbage and trash is essential. This is usually accomplished by an ordinance requiring separation and its enforcement by refusal to pick up unseparated trash and garbage. Violators are liable to prosecution.

The trash left is readily burned or buried in the open without nuisance and in the case of South Jacksonville, a small, cheaply constructed incinerator takes care of it. No fuel is needed in the operation of the incinerator. The City of South Jacksonville also gives 50 lb. samples of humus to its residents to aid their campaign for separation of trash and garbage.

The first cell was placed in operation in Dunedin in October, 1928, and since that time no nuisance has arisen at any of these plants and no complaint has been made. In closing, it should be noted that in charging a cell it should be closed within 4 days after the charging starts. Otherwise decomposition odors in the cell will create a definite odor nuisance. The cities that have installed these plants are pleased with the results from their plants and the Beccari system has proved worthwhile in each case.

AN UNUSUAL INSTALLATION OF CHLORINE EQUIPMENT

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AN interesting and unusual installation of chlorinating equipment has recently been made in Florida by the citrus industry. One of the nationally known dairy companies this season established a plan in southwestern Florida to extract and freeze orange juice. This juice, put up in attractive cardboard containers, is shipped to northern markets under low temperature conditions, where it is distributed to the consumer by milk men on their morning rounds.

Every precaution is taken to insure sterility of the outside of the orange before the juice is extracted. On a conveyor the oranges are passed through a bath, washed and scrubbed before reaching the juice extractor. In the short period between scrubbing and juice extraction, bacteria, yeast and moulds were found to multiply rapidly on the skin of the orange. To inhibit this growth a final shower of water containing 15 p.p.m. of free chlorine was arranged over the conveyor immediately prior to the juice extraction equipment. The shower is controlled by a float in a constant level box and the chlorine at the rate of 15 p.p.m. is fed by a solution feed chlorinator into the water entering the box. The plant chemist checks the chlorine application at regu-

lar intervals by the orthotolidin test.

This treatment is in keeping with the rest of the plant, where cleanliness is the watchword, and no effort has been spared to insure purity of the product. The results obtained by the chlorination of the outside of the orange have been most favorable and have contributed to an attractive and satisfactory final product.

Biological Investigation of the Water Purification Plants of Calcutta Corporation—Numerous complaints led to a proposal for the scientific investigation of the filtered water of the City of Calcutta. Observation and examination of the material collected proved that the source of all trouble was the abundant growth of plant organisms in the storage tanks and filter beds. The general method of the filter works was then briefly described. This showed a tank known as the "New Storage Tank" in the main source of supply of water for the public of Calcutta.

Illustrations and descriptions showed the conditions of the settling tanks, which explains why the filtered water could not be expected to be very clear and healthy. One day, bubbles of gas were observed to burst on the surface of a filter bed, and later this gas was ascertained to be marsh gas. During the rains, the average condition of the water is generally improved, due to the rain water increasing the oxygen content of the water, and by mechanical agitation of the surface water.

The biology of the plant and animal organisms in the New Storage Tank and filter beds is then discussed in detail. This brings out the fact that the abundance of nitrates and other compounds dissolved in the water led to the rapid development of phytoplankton in the filter beds. The filter beds were also damaged by having holes made in them by members of the animal kingdom as they grew, feeding on the plant kingdom. This showed the two-fold need for the eradication of algal vegetation.

In conclusion, it is stated that in spite of any scientific remedial measure which may be suggested hereafter, for the present as also for the future, the most important factor will be to keep the whole place thoroughly clean and clear.

At the end of the article is given a list of the various Phanerogamic specimens collected during the study.—K. Biswas, Curator, Herbarium, Royal Botanic Garden, Calcutta, India. Abstr. by R. E. Reinke.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M.D., PH.D., AND LEONARD GREENBURG, M.D., PH.D.

Handbook of Labor Statistics, 1929 Edition—This is the second handbook of labor statistics to be published by the Bureau of Labor Statistics. The first handbook (*Bull. 439*), issued in 1927, sought to bring together in convenient form for reference purposes digests of the material published by the bureau prior to the year 1927. The present handbook supplements the former one by presenting similar digests of the material published by the bureau in the years 1927 and 1928. Thus, the two handbooks, used together, constitute a convenient abbreviation of practically all the published work of the Bureau of Labor Statistics of sufficiently recent date to be of present-day interest. The material presented in these handbooks represents in large part the original work of the bureau, but this is by no means entirely the case.

Pages 249–285 are concerned with industrial accidents, from the statistical as well as the exposure point of view, including a number of principal industries. The chief interest to us here, however, is the valuable section on industrial health, pages 287–405. Here, federal agencies concerned with problems of industrial health and a review of recent studies of industrial diseases and poisons, morbidity and mortality statistics, legislation, health and working conditions comprise the topic headings. There is a further section on industrial home work, pages 407–437.

Dangerous trades and industries, industrial poisons and other hazards, and most of the chief occupational diseases of current interest are represented by special articles, usually synopses of the originals, accompanied by the proper references.—*Bull. 491*, Miscellaneous Series, U. S. Bureau of Labor Statistics, Washington, 914 pp. with Index (Aug.), 1929, price $1.00.

Dangers in Refining Radioactive Substances—It is hoped that this and similar investigations may lead to the removal of all dangers involved in the handling of unsealed radioactive substances. In a series of decomposition products of radium and mesothorium the principal sources of danger ordinarily present are the gamma radiations (particularly radium C, mesothorium 2, and thorium C″) and the radioactive gases in the atmosphere (radon and thoron).

Ten micrograms of radium deposited in the body is probably the tolerance limit of the average person. The electroscopic examinations give a timely warning of danger, far more sensitive than any other method. Since the blood of the workers employed in the refining processes described showed no abnormality (the abstractor is hardly inclined to believe this after an inspection of the tables of blood counts of 3 workers employed in the mesothorium laboratory), it is concluded that the exposures have produced no injury to the blood-forming organs. None of the workers (5 in all) has experienced any debilitating effects.

Inasmuch as the precautions now taken are far in advance of those formerly taken, going back for over a period of 10 years after ceasing work, it is concluded that exposure to dangerous radiations may be reduced to a negligible extent, at least where the exposure period is not over 2 or 3 years.—

Herman Schlundt, William McGavock, Jr., and Mildred Brown, *J. Indust. Hyg.*, XIII, 4: 117–133 (Apr.), 1931.

The Toxicity of Certain Benzene Derivatives and Related Compounds—The outstanding pathologic picture seen in animals poisoned with the various benzene derivatives was a tendency to extravasation of blood in the lungs. A considerable number of benzene derivatives were investigated. With most of the preparations the toxicity was rather low. There is very little danger of accidental poisoning in industry with any material having a minimum lethal dose of over 0.25 gm. per kilo, or 17.5 gm. for a man weighing 70 kilos. Even with limits under that point but over 0.1 gm. per kilo, there is little danger in handling the preparations if thought and reasonable precautions are given to the matter. Personal idiosyncrasy must be kept in mind however. Also that fat soluble or lipoid soluble materials, if water insoluble, may poison by skin absorption in doses not toxic by mouth.

It must be emphasized that the toxicities here reported refer only to administration of solids or liquids by mouth. Some of the substances may be decidedly more toxic, however, by skin absorption, and also through inhalation. Therefore these results do not necessarily represent the hazards of industrial exposure to vapors or to skin absorption.—Henry Field Smyth, *J. Indust. Hyg.*, XIII, 3: 87–96 (Mar.), 1931.

The Reduction of Mine Air Temperatures—Authors' summary—Various methods of obtaining a cooler atmosphere in mines have been mentioned, and an experiment in local air conditioning by means of artificial humidification has been described.

The air conditioning was tried on a coal face 170 yards in length, and the effects of humidification were observed when the apparatus was placed (a) 120 yards away from the face, and (b) close to the face. In the former case the conditioning reduced the air temperature by 7°, but the temperature rose quickly, and by the time the coal face was reached it was only 2.1° lower than under normal conditions. With the apparatus working close to the coal face the air reached the face 7.8° cooler than under normal conditions, but after traversing 35 yards of face the cooling effect was reduced to 1.9°, and further along the face the effect was barely noticeable.

The conditioning caused no sensible rise in the wet bulb temperature.

It is concluded that air conditioning by this method is not likely to be of value for general application, but that it might be used as a palliative measure in certain circumstances.—T. Bedford and C. G. Warner, *J. Indust. Hyg.*, XIII, 4: 135–139 (Apr.), 1931.

"Industrial Health Digest"—This monthly 4-page pamphlet, formerly "The Stethoscope," began with Vol. I, No. 1, the May issue, 1931, and is to be devoted to especially selected articles and notes of interest to industrial physicians and surgeons. The editor, Dr. C. O. Sappington, Director, Division of Industrial Health, National Safety Council, Chicago, has built up a representative advisory committee and is also giving publicity to the work of the various health committees of sections composing the National Safety Council. The articles or abstracts are all brief and carefully edited.

Pneumonoconiosis: The Delayed Development of Symptoms—The authors report 4 cases: (1) Development of symptoms of silicosis 23 years after an exposure of 4 months; (2) Development of symptoms of silicosis 10 years after an exposure of 2 years; (3) Development of symptoms of silicosis 14 years after an exposure of 4 years;

and (4) Development of symptoms of silicosis 10 years after an exposure of 10 years. A number of years of entire freedom from symptoms following the earlier exposure was the case in each instance. Tuberculosis eventually developed in each instance.

The authors point out that most clinical and statistical studies of silicosis have been made on groups of men still employed in dusty trades. From such statistics one cannot say what is the late effect of short exposures.

These instances suggest the necessity of revising the conception of the length of exposure necessary to produce the disease and make it seem probable that after relatively short exposures sufficient dust may be deposited in the lungs to set up a progressive fibrosis, which only after many years becomes sufficiently extensive to produce symptoms. They tend to indicate that men in the work develop symptoms only after many years of exposure, not because that length of exposure is necessary but because it takes a long time for the disease to develop.

—James A. Britton and Jerome R. Head (Chicago), *J. A. M. A.*, 96, 23: 1938–39 (June 6), 1931.

Medico Legal Aspects of Disability in Industrial Lead Poisoning—The present paper concerns prognosis and disability in lead poisoning, and is based upon experiences with over 200 cases observed during the last few years. The details of 12 cases and a résumé of about 90 others constitute the basis upon which the conclusions are reached.

An illustration is given, also, of the dangers of over-confidence in safeguards: a thoroughly modern plant with presumably every known safeguard including physical examinations at frequent intervals and even ordinary illnesses treated by the plant physician, nevertheless resulting within a comparatively short time in a veritable epidemic of lead poisoning in which a great many men were taken acutely ill. "The explanation lies in the very nature of the industry and its inherent hazards."

Industrial lead poisoning is a very costly affair. The annual wage loss attributable to this disease amounts to millions of dollars and the annual total loss to about 5 or 6 times that amount. At present, lead poisoning is compensated, it is thought, in 12 states only, but "the worker still pays the bill in pain and suffering, impaired productive power, workless and wageless weeks and years, and consequent lowered standard of living. It has been estimated that the injured workman assumes from three-fourths to four-fifths of the financial loss attending his incapacity even under the most liberal compensation laws."

Despite the fact that a goodly portion of the lead industry endeavors to avoid payment of compensation for lead poisoning, instead of preventing it and curing when it does occur—as by signing up each employee as an independent contractor, or discharging one dissatisfied race and employing another, or certifying that men ill with lead poisoning were suffering from grippe, influenza, and gastritis—the industry as a whole is willing to coöperate and eradicate lead poisoning from its midst provided it is given the proper incentive and guidance.

That a true case of lead intoxication usually leaves an indelible imprint upon the human system and causes permanent pathologic changes no one disputes. Nor is it denied that poisoning by the same metal may terminate fatally. While Dr. Joseph C. Aub had stated that encephalopathy and peripheral nerve changes may be permanent in nature, but he had no evidence to prove or disprove other organic changes, Dr. E. R. Hayhurst, Dr. Harrison S. Martland, Professor Chayes and Dr. Levin of the Berlin-Lankowitz Hospital (the last two mentioned had made a study of 1,500 cases of lead poisoning), were convinced of other organic changes, as in the kidneys, etc.

After a brief discussion of the organic effects and duration of temporary disability, the author discusses like features of permanent disability. He concludes that about 50 per cent of his cases have cleared up and left no appreciable disability, or have not reached the stage where permanency could be established.

The subjective and objective symptoms of the cases studied, in the order of their frequency, were as follows:

SUBJECTIVE

	Per cent
Persistent headache	70
Dizziness	60
Obstinate constipation	52
Muscle group weakness	48
Premature fatigue	36
Epigastric pains	35
Visual disturbances	33
Arthralgia	32
Shakes	32
Insomnia	20
Periodic vomiting	18
Loss of weight	14

OBJECTIVE

	Per cent
Anemia	60
Eye-ground changes	33
Tremors	32
Unsteady station	25
Hypesthesia and hypalgesia	20
Nephritis	18
Arteriosclerosis (premature)	16
Lead line	16
Cardiac lesions	12
Retinal hemorrhage	11
Facial palsies	10
Dyspnea	9
Wrist and ankle drop	5
Convulsions	2

In reply to a questionnaire sent to the medical officers of 30 life insurance companies scattered throughout the United States and Canada we received the advice that a man who had suffered from industrial lead poisoning would not be issued ordinary life insurance and would be "rated" up for a substandard form of insurance. Practically none would issue health insurance or attach a disability clause to the policy. While this is not conclusive, it is rather significant, in view of the attitude of the insurance companies, who base their opinions on past experience.

Among chief observations were the following: (1) Wrist drop was comparatively rare, with the exception of the painter who used his wrist muscles more than the others; (2) The blood picture is of diagnostic significance in the acute and subacute stages, but is of no import in the chronic stage, which may display a practically normal blood; (3) Persistent headache, dizziness, constipation, general weakness, visual disturbance, muscle and joint pains, in their respective order, are the chief complaints of the patient suffering with chronic plumbism; the other symptoms are just as definite, but less frequent; (4) Clinical pictures and blood findings may vary by industries: white lead workers showed a persistently low hemoglobin, smelterers, a low red blood count; and lead battery workers, arthralgia and myalgia; (5) Workers with chronic plumbism are ready victims for intercurrent diseases, particularly tuberculosis. Incised or lacerated wounds "fester" and the duration of the ordinary cold is out of proportion to its severity; (6) Over-worked men have a longer period of temporary disability and are subject to most residual damage; and (7) The length of exposure was of no material significance. Some men with 2 or 3 weeks' exposure suffered from a more intense attack and were left with greater disability than those with long years of exposure.

CONCLUSIONS

1. A mild case of lead poisoning may leave no permanent disability.

2. The gastrointestinal type of lead poisoning is of a temporary nature and the resulting persistent constipation is not disabling in character.

3. The cerebrospinal form of lead poisoning is the most distressing in its manifestations, most destructive in nature, most per-

manent in character and may result in total permanent disability.

4. The kidneys usually show the most degenerative changes.

5. Long hours and overwork are conducive to greater disability.

6. Chronic lead poisoning sufferers have a lowered resistance, are poor risks for health insurance, and have a shorter life expectancy.

While the author is not able to produce the legal proof, he feels that once a man suffers from a severe industrial lead intoxication he never completely recovers from it and carries the sequels to the end of his days.—Max Kummel, *J. Med. Soc. of New Jersey* (Apr.), 1931, 7 pp.

Studies on Experimental Pneumonokoniosis. VI. Inhalation of Asbestos Dust: Its Effect upon Primary Tuberculous Infection (Concluded)—The experiments demonstrate that fibrous structures at least as long as 200 μ can pass the protective mechanism of the upper respiratory tract and enter the lung. Inhaled asbestos dust does not penetrate to the terminal alveoli of the lung as is the case with a particulate substance such as quartz.

The rate of infiltration of lymphoid tissues in the lungs varies considerably with the animal exposed. Asbestos bodies appeared in the lungs of guinea pigs in approximately 70 days but were not discovered in rabbits after 330 days. These bodies are produced by oxidation and hydrolysis of the chrysotile molecule (of asbestos). They are evidence that the body is capable through chemical processes of effecting changes in inhaled silicate particles.

Granite dust remains within the pulmonary air spaces and produces no local reaction of fibroblasts for several years, but in the lymph nodes characteristic silicotic nodules develop within 2 years. Carborundum failed to affect the lung tissue even in 4 years, but fibrosis in the lymph nodes was observed in 4 years. Quartz is rapidly concentrated in the lymphoid tissues with a rapid formation of fibrous tissue. Asbestos is concentrated in the bronchioles and their lateral alveoli. Phagocytes carry it into the walls, where fibroblasts are stimulated.

Primary tuberculous infection is influenced only to a limited degree by inhaled asbestos and the tendency to healing by fibrosis was marked; at autopsy 40 per cent of the cases showed healed fibrous tuberculosis. The contrast with quartz dust was marked. Here, in every exposure longer than 5 months, generalized tuberculosis of the lungs and other viscera resulted. In one group of guinea pigs infected with tuberculosis 2 years after the commencement of dust exposure, the localization of tubercles was atypical, while early disease in the spleen and hepatic lymph nodes was the rule. The combined action of asbestos dust and tubercle bacilli in the lung produced more fibrosis than did either agent acting independently.—Leroy U. Gardner and Donald E. Cummings, *J. Indust. Hyg.*, XIII, 3: 97–114 (Mar.), 1931.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Nutritive Value of Potato Protein and of Gelatin—The literature records some instances of continued growth and maintenance on an exclusive diet of potato or potato with both nitrogenous and non-nitrogenous supplements. Relatively satisfactory results were obtained in human beings but the converse in the case of rats. On the theory that the poor results reported were due to a low protein level, experiments were undertaken with potato preparations containing small amounts of starch.

Tuberin contains sufficient amino acids which are lacking in gelatin and which are essential for satisfactory animal growth. The percentage of tryptophane in tuberin is unknown.

A basal diet, used on young albino rats, consisting of a potato preparation, salt mixture, dextrin and cod liver oil, provided 9 per cent of crude potato protein. The potato ingredient was prepared so as to eliminate most of the starch and the product contained 3.48 per cent of nitrogen. On the basal diet the rats maintained their weight for a period of 3 weeks. The addition of 10 per cent commercial casein after extraction with hot alcohol produced immediate growth response which ceased when the casein was withdrawn.

No change resulted after the addition of 4 per cent yeast, untreated, or autoclaved to destroy vitamin A. Ten per cent of gelatin did not make up the protein deficiency apparent in the basal diet. The addition to the gelatin of tyrosine, tryptophane or cystine in combination produced no better results, and growth was not adequate when the gelatin was increased to 20 per cent. Casein and lactalbumin were fed as 4, 7, and 10 per cent additions to the basal diet.

The experiments indicated no important difference between the proteins on the 7 and 10 per cent levels, but at the 4 per cent level lactalbumin as an addition was superior to casein. The authors conclude that casein and lactalbumin contain an essential dietary factor lacking in the potato preparation and in gelatin and that this factor is not one of the known amino acids.—D. Breese Jones and E. M. Nelson, *J. Biol. Chem.*, 91: 705 (May), 1931.

The Organic Acids of Spinach, Broccoli and Lettuce—The value of acids in food metabolism depends upon whether the acid is easily metabolized, as citric and malic, or difficultly metabolized, as oxalic or benzoic. Certain green vegetables have been examined for oxalic acid and the work here reported was undertaken to include other organic acids.

The spinach, broccoli and lettuce used in this experiment were purchased on the Washington market, and oxalic acid was determined by the method of Arbenz (*Mitt. Lebensm. Hyg.*, 8, 98, 1917). Since no complete analysis of broccoli has been published a complete examination was made and is reported in a table. Spinach was found to contain 0.31 per cent oxalic acid. Citric acid and a small quantity of malic acid were separated by the ester distillation method. The predominating organic acid in broccoli is citric acid. It also contains l-malic acid and small amounts

of oxalic acid and succinic acids. The analysis shows that the leaves and buds have practically the same composition and nutritive value. Both the buds and leaves contain proteins somewhat in excess of that previously reported in spinach. Lettuce was found to contain oxalic acid, 0.011 per cent, l-malic acid, about 0.065 per cent, and citric acid, about 0.048 per cent.—E. K. Nelson and H. H. Mottern, *J. Am. Chem. Soc.*, 53: 1909 (May), 1931.

Vitamins in Canned Foods. X—The Vitamin Content of Some Common Vegetables—Since the commercial canning of turnip greens has developed considerably during recent years a study was made to compare the vitamin A and C content of this article of food with other green vegetables. The vegetables used were head lettuce (inner and outer leaves), celery (bleached and green), and raw carrots (whole and shredded for 1 to 3 hours before feeding).

Twenty-five mg. of canned turnip greens supplied more vitamin A than 5 gm. of bleached celery and as much as 500 mg. of unbleached celery. They were found to be unsurpassed by any other vegetable and comparable to spinach. Canned turnip greens, head lettuce, and celery are not rich sources of vitamin B. There was found to be more of the B_2 (G) fraction than of the B_1 fraction in canned turnip greens. Head lettuce was superior to celery and canned turnip greens in its content of vitamin B complex.

Compared with canned turnip greens, the vitamin C content of head lettuce, celery and raw carrots was surprisingly low in view of the general belief that raw vegetables are always a good source of vitamin C. Two to 4 gm. of turnip greens gave better growth and less evidence of scurvy than 5 gm. of celery, green or bleached, 10 to 15 gm. of head lettuce, inner or outer leaves, or 10 gm. of whole or 15 gm. of shredded carrots. —E. F. Kohman, W. H. Eddy, and Celia Zall Gurin, *Indust. & Eng. Chem.*, 23: 808 (July), 1931.

Increasing the Vitamin D Potency of Cow's Milk by the Daily Feeding of Irradiated Yeast or Irradiated Ergosterol—In this experiment, irradiated yeast and irradiated ergosterol were fed and compared as sources of vitamin D for dairy cattle. Twenty-one Holstein-Friesian cows, each producing more than 45 lb. of milk daily on a three-time milking schedule, were selected at random for experimentation. They were separated into 7 groups, each containing 3 cows. Throughout the experiment, which included a preliminary feeding period of 3 months and a supplemental feeding period of 4 weeks, all cows received the same basal ration of alfalfa meal, corn silage, beet pulp and grain mixture.

Group I, or the control group, received nothing but the basal ration and water. During the supplemental feeding period the basal ration of the other groups was fortified with vitamin D obtained from irradiated yeast and irradiated ergosterol.

The cows were exercised at midnight to avoid the sun's rays. Throughout the experimental feeding period, each cow in groups II, III, and IV received 10,000, 30,000 and 60,000 rat units per day respectively of vitamin D as irradiated yeast, while those in groups VIII, IX, and X received 15,000, 45,000 and 135,000 rat units per day respectively of vitamin D as irradiated ergosterol dissolved in relatively small quantities of corn oil.

The vitamin D potencies of the butterfats from the cows in the first three groups were approximately 2, 8, and 16 times respectively that of the butterfat obtained from the control group, while the vitamin D values of the butterfat from the cows in the last 3 groups were

approximately 2, 4, and 16 times respectively that of the negative control. The fact that vitamin D potency of cow's milk can be increased at least 16 times by feeding is important, since milk with its high calcium and phosphorus content can be made a still better food. These investigations are being continued and will be published by the authors later.—Byron H. Thomas and Florence L. MacLeod, *Science*, 73: 618 (June 5), 1931.

PUBLIC HEALTH NURSING

EVA F. MACDOUGALL, R. N.*

The Proposed Committee on Teaching Obstetric Nursing of the White House Conference on Child Health and Protection—In last month's notes it was revealed that a survey by the White House Conference on Child Health and Protection Subcommittee on Obstetric Teaching and Education of Nurses and Nursing Attendants showed that obstetric teaching in schools of nursing has been inadequate. Improvement depends upon improving the conditions affecting teaching of obstetric nursing unfavorably in the nursing schools or devising a way to give obstetric training to large numbers of nurses before they are permitted to care for maternity cases. The formation of a committee was suggested to work on this problem and consider the following:

(a) Studying the preparation in obstetric nursing in those countries where it is considered a postgraduate subject and comparing it with a study of our present methods.

(b) Preparing a fundamental curriculum for theoretical instruction and practical experience in obstetric nursing *that will be sufficient* to teach nurses what adequate maternity care is and how to give the nursing part of it from the beginning of pregnancy through the puerperium.

(c) Preparing a plan for securing the approval and gradual adoption of the curriculum by schools of nursing throughout the country.

(d) Preparing a curriculum for postgraduate courses in obstetric nursing which will be supplementary to the fundamental courses and will be planned primarily to prepare experts in obstetric nursing and not to supply additional nursing service for the hospital.

(e) Preparing a plan for securing such courses in certain selected hospitals.

(f) Forming a subcommittee to study the best way to prepare, control, employ, and supervise attendants, nurses' aids, home helps, practical nurses, and others of this type who care for maternity patients.

—The White House Conference on Child Health and Protection. Excerpts from the Report of the Subcommittee on Obstetric Teaching and Education of Nurses and Nursing Attendants, *Am. J. Nurs.*, XXXI, 5: 585 (May), 1931.

The Chicago Conference—Seventeen state supervising nurses, 16 directors of postgraduate courses in public health nursing, 5 presidents (or their representatives) of S. O. P. H. N.'s, and 6 chairmen of public health nursing sections of state nurses' associations—in all representing 26 states—gathered in Chicago in May at a 2-day meeting

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 6 State House Annex, Indianapolis, Ind.

called and arranged by the National Organization for Public Health Nursing, because of the expressed desire of these groups for an opportunity to discuss their programs and problems with other nurses in like positions and with the National Organization for Public Health Nursing.

There were two general meetings, and the rest of the time the nurses divided into groups for closed meetings. At the first session Dr. Bishop of Tennessee and Dr. Walker, recently of the American Public Health Association, now of the Commonwealth Fund, gave papers; Dr. King of Indiana, and Dr. Harper of Wisconsin, representing the State and Provincial Health Authorities of North America, joined in the discussion.

The purpose and spirit of this conference, which was an experiment, were not to arrive at any weighty conclusions. The results will come through the stimulus of an interchange of ideas and experience between nurses from different parts of the country. Yet each nurse returned home with a new inspiration, a new zest for tackling her own situation, because of this recent contact with others.

All the nurses present concluded definitely that a conference of this kind should be arranged each year; that because of its limitation in numbers, making informality and real interchange possible, it had a value not attainable through conventions.

For the N. O. P. H. N. itself this conference indicated the direction of certain needed services which will help to guide the development of its future program. And it left no doubt, had there been any to start with, as to the interdependence of the national body and these other groups.—N. O. P. H. N. Release, July 1, 1931.

The Frontier Nursing Service—Six years ago Mary Breckenridge took a two months' horseback trip through the Kentucky mountains locating the midwives who reported the great majority of the births the preceding year. Later a survey showed it would be energy wasted to try to improve the work of these midwives, who were all grossly ignorant and superstitious and averaged over 60 years of age. Mrs. Breckenridge then took a nurse's training course in New York and a midwife course in London, came back, and started the Frontier Nursing Service, in a Kentucky county in which, for a population of 10,000 people in an area of 50 square miles, there was no resident physician.

The bulk of the cost of the service, the budget for which is $126,000, is supplied by people from the more prosperous parts of Kentucky through gifts, the remainder from all parts of the United States, and particularly 12 large cities which have Frontier Nursing Service committees.

The service now has 28 nurse midwives, a physician of its own, in cooperation with the state health authorities, with another doctor maintained by a medical mission, and with a dentist for 6 months of the year. The service now extends over an area of 1,000 square miles in the remote Kentucky mountains where there are no railroads, automobile roads or bridges over its rivers and creeks.

There are 9 nursing centers with usually 2 nurses living in each; each nurse has her own district and her work is generalized except that she has had training in midwifery in England besides her public health nursing training. At one center, Heyden, there is an 18-bed hospital and clinic building.

The nurses provide nursing, public health service, and midwifery under medical direction. In addition to the hospital and clinics which are under medical direction the service carries on four types of field work: (1) midwifery, including careful prenatal, and post-

partum care before and after delivery, with a physician called for difficult cases; (2) baby and child hygiene care; (3) bedside nursing care for all ages and ailments; (4) general preventive care coöperating with the Kentucky State Board of Health; under this comes prevention of hookworm, smallpox, etc., chlorinating wells, getting defects corrected among school children, etc.

The nurses all ride horses to get to their cases, and have 33 horses at their disposal. Each nurse has two saddle bags, one in which to keep her general nursing equipment weighing 38 pounds, the other in which she keeps her maternity nursing outfit weighing 48 pounds. The weight of these is distributed evenly on the two sides of the horse.

The Frontier Nursing Service hopes some time to reach all the isolated and difficult sections of the United States with the same effective work that is being done here in Kentucky. It is not generally realized that from 15 to 20 millions of our population live under frontier conditions in different sections of the country. It is in part because of the poor care available for mothers and babies in these remote sections that 16,000 mothers die in childbirth yearly, and nearly 200,000 babies die at birth or before they are a year old.—Edith R. Solenberger, Nurses on Horseback, *Hygeia*, July, 1931, pp. 633–638.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

Education-Publicity Headquarters at Montreal—The Committee on Meetings and Publications has set aside a room as a headquarters *for those in any and all sections* who are interested in the spread of information about health activities and education in personal health.

Please write long in advance if you have special material to display.

Copies of printed matter, bulletins, news releases, radio talks and other samples will be displayed in classified portfolios. Address to Montreal Display, Evart G. Routzahn, 130 East 22d St., New York. *Try to send this material during August.* Canadians please note especially.

There will be a table for free samples, *but any taken from the United States should be individually stamped* " Printed in U. S. A." Will not be passed by Canadian customs unless so stamped.

Dental Hygiene Information Source—The American Dental Association, 58 E. Washington St., Chicago, offers information and materials for educational work according to the following:

The Bureau of Dental Health Education: Offers suggestions and counsel in the promotion of state and community dental health programs. Supplies educational material such as reprints, lectures, talks, posters, slides and films to dentists, hygienists, teachers, nurses and other public health workers. Gives advice and assistance in developing talks and lectures pertaining to dental hygiene for various types of audiences.

The Library Bureau: Circulates dental books and package libraries to members. (Each package library is a collection of periodical clippings, reprints, etc., on one phase of dentistry; over 200 phases have been covered.) Answers questions regarding dental literature.

The Bureau of Chemistry: Investigates old

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

and new dental remedies as presented to the profession and the public. Furnishes chemical data on "secret" formulas.

Publicity Dictionary—John L. Scott, of *Printed Salesmanship,* Chicago, was asked for some definitions:

About the only really authoritative source I could suggest for the definitions about which you recently inquired would be the dictionary. And common usage has, of course, changed the meanings of a number of them according to the dictionary.

The following definitions are my own personal opinions of the meaning for each one and you may take them for what they are worth:

The booklet, pamphlet and brochure I would group together as all being small books, semipermanently bound, the only differences being that a pamphlet has a self cover, the booklet usually has a cover made of something heavier, and the brochure cover is more elaborate and is generally in the form of advertising display.

A handbill is a single sheet printed on one side only, for personal distribution in various ways—house-to-house, by automobile, on street corners, etc.; and a dodger is a small handbill, and a flyer, a small dodger.

A leaflet is a single sheet and may be printed on one or both sides.

A bulletin is an announcement of news or a periodical publication, as the proceedings of a society.

A circular ordinarily has the four-page letter as a basis and is usually found in varying sizes and folds.

A folder is a circular with at least one vertical fold and two horizontal folds but a great many times it has quite a few more folds than these.

"What's On Your Mind?" at Montreal—How could this be done? Where to turn for information? Why was something done this way instead of that way?

Such questions and others will be asked and answered in a luncheon session of the Public Health Education Section. First attention will be given to questions submitted in writing to the editor of this department.

"I Was Never Invited"—To send material for this department, wrote one health worker recently. Will anyone who feels that way please look at the lower left corner of this page—or the same corner in any issue of the *Journal* for a number of years?

Dominion Readers!—We never get enough material for this department from Dominion sources.

Will Canadian readers please note the references to Montreal in this department, copy them, and pass on to local, provincial and Dominion health agencies—public and private?

How to Get Copies—Single copies of most of the publications mentioned in this department *may be secured by writing to the agencies to which they are credited.* Do not expect a city agency to supply free copies for distribution in another city, or a state department to furnish quantities for use in another state.

Usually return postage should be enclosed to private agencies. Although a price is quoted on government publications, in many cases single free copies will be sent if one writes direct to the responsible department or bureau.

Prize Awards for 1931—The Social Work Publicity Council awards include a number of health agency winners:

Envelope enclosure: To Henry Street Nursing Service for a blotter used in raising funds for summer camps.

House organs for lay public: Honorable Mentions to Sunnyslope Sanatorium, Ottumwa, Iowa, and State Charities Aid Assn., New York.

House organs for the staff: first award to Bergen County Tuberculosis and Health Assn., Hackensack, N. J.

Industrial posters: first award to National Tuberculosis Assn. (See under Posters.) Honorable Mentions to the same and to State Charities Aid Assn., New York.

The above and other specimens will be shown at Montreal in September.

Reasons for the awards are given in *News Bulletin,* Social Work Publicity Council, New York, June, 1931.

Please Tell the Editor—Please tell the editor of this department of your successes or failures in getting copies of materials mentioned on these pages from month to month.

Also tell us if you get requests for copies of your publications when they are mentioned in this department.

Newspaper Men Are Like That—A business concern reminds its local branches:

> Some newspapermen are hard to get along with. The majority are not. Their average amiability and reasonableness is as high as any business or profession in the world. They don't like servility; they don't like arrogance; they don't like fake. They are brought up in a school which teaches them, as a first lesson of their trade, to spot all such hokum whenever they see it.
>
> Treat your newspapermen respectfully, friendly, honestly, and they will treat you the same way.

A Health Parade in China—June 7 the *New York Times* announced plans for an anti-cholera parade in Shanghai:

> The gigantic parade will be a lurid affair, and in an effort to attract the attention of as many hundreds of thousands of persons as possible many kinds of noise will be utilized. Brass bands, drums, a fife and drum corps, gongs, wailing Chinese violins, and even an airplane mounted on a truck with the engine going as loudly as possible will announce the parade's approach and passing.
>
> This hullabaloo is designed to arouse the interest of apathetic Chinese, to instruct them by example on how to avoid the spread of cholera, and to teach them basic ideas of cleanliness in handling food and the ordinary safeguards of decent sanitary measures.
>
> Banners and floats and 1,000 young students shouting through megaphones will emphasize that unclean water, unclean food, unclean fingers, flies and filth are the agencies through which cholera is spread. The coffins will be labeled as though they contained the bodies of men or women who contracted cholera because of carelessness, and the stuffed dummies on the stretchers will be similarly placarded.

Is it possible that we have become too sane and respectable in attempting to stir "apathetic" Americans—about the rising tide of automobile accidents, for example?

Welfare and Relief Mobilization—This is the title of the inter-community money-raising effort in 370 cities to be conducted, largely under the auspices of community chests, October 19 to November 25, 1931. It is hoped that the campaign will reinforce the efforts of public and private health and welfare agencies to obtain public appropriations and private contributions for two objectives: first, to maintain present activities, and second, to meet conditions growing out of the unemployment situation. Nationally promoted as a coöperative effort, yet it is wholly local in management and in use of funds to be raised.

The central committee invites ideas for promotion and publicity. Statements as to effects of the depression on health are requested. Address Bart Andress, Association of Community Chests and Council, Graybar Bldg., New York. Also send copies of anything you have issued touching hard times and health conditions.

HONORABLE MENTION

To Tennessee Department of Health: for biennial report with table of contents; for the chapter reporting on health education.

MAGAZINE ARTICLES

"The Family Doctor," editorial. *Saturday Evening Post.* July 4, 1931. We need the doctor; what he needs.

"Fewer and Better," editorial. *Collier's.* June 20, 1931. The new birth rate.

"The Hazard of the Automobile," by

Dr. J. A. Tobey, 350 Madison Ave., New York. Reprint from *Scientific Monthly*. June, 1931. *Free.*

"How to be Happy though Vacationing," by L. Clendening, M.D. *Collier's*. June 27, 1931. How to survive vacation—and accidents.

"Is Advertising Honest?" by T. S. Harding. *Nation*. May 20, 1931. Foods, tooth-pastes and "cures."

"Over a High Health Hurdle," by S. G. Blythe. *Saturday Evening Post*. June 6, 1931. Why long life after 63.

"Summer Health Sense," by G. F. Alsop, M.D. *Woman's Journal*, 171 Madison Ave., New York. *25 cents*. Also "Birth Control: Yes or No?" by D. D. Bromley. An attempt to state both sides.

"Sunburn—Friend or Foe?" by W. B. Long, M.D. *New York Herald-Tribune Magazine*. July 5, 1931.

"The Swallowed Watermelon," by S. Kerr. *Saturday Evening Post*. May 30, 1931. Yes, it is about health, food fads, etc.

"Take Deep Breath," by H. Durham. *Collier's*. June 20, 1931. "Most of us are only half-aired."

"Too Much Health Advice." *Literary Digest*. June 27, 1931. Copied from *Journal* of Indiana State Medical Assn. "The housewife caught in a maze of vitamins, calories, carbohydrates, and 'acid-producing' foods, and does not know which way to turn."

"Vacation in the Backyard," by M. Fleming. *New York Herald-Tribune Magazine*. July 15, 1931. How to use $25.00.

POSTERS

Few health posters are truly "posters." In contrast with the many illustrated charts or placards is the new series of 4 issued by the Nat'l Tuberculosis Assn., 450 7th Ave., New York, and available through all tuberculosis associations. Three are devoted to the theme of general health, and may be classified as appeals to children, youth, and adults (although each may be used for any age group); the fourth is a specific message about tuberculosis to working men and women. 15″ by 22″; 4 to 7 colors. *Free folder with black and white copies.* (See Prize Awards.)

Unusually well done is the set of 8 "Child Feeding Charts" prepared by the Bureau of Home Economics, Department of Agriculture. *25 cents* a set from Supt. of Documents, Washington. Photographs and limited text; black on white; 15″ by 23″; illustrate good food habits and effects of good nutrition. Fewer capital letters in text below the pictures would have increased legibility.

We hope to display at Montreal a group of the health and safety posters issued by the Western Electric Company under the direction of R. T. Barker. It is understood that samples are *not* available.

"Posters and Their Making," by Agnes Smith. *Public Health Nurse*. Sept., 1930. Tells "how a set of 10 posters on health for elementary grades was brought to completion." Emphasizes that—

> . . . if the poster is to be really effective the picture should be so simple that all who see the poster can understand the message without the necessity of any wording. If the maker is sure that this goal has been achieved, then it is quite permissible for a few short words to be added for emphasis, but they cannot be depended upon for the interpretation of the idea. It must be self-explanatory.

NEW

The Playground, 315 4th Ave., New York, is now *Recreation*. New inside and out.

The Public Health Nurse, 450 7th Ave., New York, becomes *Public Health Nursing*. The change follows (but is not the result of) 3 months of diverse shades of blue for the cover page. The final choice is worth looking for.

With July, 1931, *Red Cross Courier*, Washington, D. C., changes from a semi-monthly to a monthly publication.

TIMELY TOPICS

A letter from Charlie Chaplin is quoted in a news release of National Society for the Prevention of Blindness, 450 7th Ave., New York. *Free.*

Pittsburgh's Health, Dept. of Public Health, came out with flags and cover-page text in red and blue. "Carelessness is a human trait, not found in dumb animals" introduces summer hazards.

That "Good eyesight is largely responsible for the making of sport champions" is the theme of a radio talk by David Resnick, National Society for the Prevention of Blindness. *Copy free.*

Usable ideas are better than warnings. At least sunburn warnings might be supplemented by such positive information as the following from *The American Girl* published by the Girl Scouts:

> Girls who like to be brown-bodied but not burned have discovered that rubbing themselves with oil before sun exposure will do the trick. Any oil—olive or mineral. If by accident you get a bad sunburn, you should treat it as you would any severe burn. Minor burning or chapping should be treated immediately with a little oil—use a bit of cold cream or cleansing cream before you wash your face. Calomine lotion—a fine powder liquid which you can buy at the drug store—is a cooling, soothing thing to use for summer irritations such as heat rash, bites or mild sunburn.

"Vacation Hazards"—*Safety Education,* 1 Park Ave., New York. June, 1931. A wealth of teaching ideas for elementary and high schools.

"Vacation Typhoid Fever"—*Missouri Public Health News,* State Board of Health. June, 1931. "Highly civilized communities have very little typhoid fever."

"Does Running Water Purify Itself?"—New York State Dept. of Health. April, 1931. Radio talk. *Free.*

Sanitation in summer resorts, fresh air camps, recreational camps, etc., is covered by a series of articles in *Canadian Public Health Journal,* Toronto. June, 1931. *25 cents.*

"Tourist Camp Sanitation" edition of *Iowa Public Health Bulletin,* State Dept. of Health. Jan.–March, 1931.

The Dept. of Health, Ontario, offers educational printed matter and advice touching summer resorts and other recreational facilities, and says:

> The Department is at all times willing to assist the Medical Officer of Health in the improvement of Recreational Sanitation within his municipality.

"A New Method of Killing Poison Ivy"—*Health News,* New York State Dept. of Health. Oct. 6, 1930.

"Beware Poison Ivy!"—*Ohio Health News,* State Dept. of Health. May 15, 1931. Good brief statement.

"Prevent Poison Ivy Poisoning"—*Health Briefs,* Tenn. Dept. of Public Health. June, 1931. The source and preventives.

"Avoid Ivy Poisoning by Thorough Washing"—*Woman's Page Miscellany,* Cleanliness Institute, 45 E. 17th St., New York. "According to the Department of Agriculture." *Free.*

"Poison Ivy"—*Scouting,* 1 Park Ave., New York. June, 1931. More detailed description; use of iron chloride.

TELEVISION

Right on the job was the New York State Dept. of Health in presenting March 30 what was probably the first television broadcast of health material.

Then on June 1 the New York City Dept. of Health gave the first combination of television and straight broadcast. The broadcast was the first of a series of talks on weight control in which scientific and medical advice on safe weight reduction methods was

explained each Monday afternoon at 4:45 o'clock during June and July. Audiences could see and hear the talks at Aeolian Hall and 4 department stores.

MOTION PICTURES

Now is the time for taking amateur pictures of summer camps for interpretation and promotion next winter and spring. Argument and suggestions will be found in "Cine Selling for Summer Camps," by E. W. Page. *Movie Maker*, 105 West 40th St., New York. July, 1931. *Sample free.*

Making an Amateur Health Movie, by H. E. Kleinschmidt, M.D. National Tuberculosis Assn., 450 7th Ave., New York. *10 cents.* A 21-page mimeographed pamphlet of practical, working suggestions. Says the introductory paragraph:

> The silent movie is being elbowed out of the theater—for better or for worse. But as a means of teaching certain subjects effectively and entertainingly, the silent motion picture retains its unique value. Now is the time to capitalize this educational instrument for teaching health. Owners of cameras and projection machines are increasing in number; the amateur movie is growing out of its toy stage and becoming a serious vehicle of expression. Like the use of the typewriter, the brush, or the piano, the technic of the movie is worth mastering. Here are a few elementary helps and hints.

"Deferred Payment," 4-reel film produced by British Social Hygiene Council, is offered by American Social Hygiene Assn., 450 7th Ave., New York. This film, which deals with syphilis in drama form, has the unanimous endorsement of both lay and professional groups as an effective means of informing the public. Sale or rental.

"Fifty Years of Service to Humanity" is a one reel picture designed especially for this jubilee year of the American Red Cross.

American Social Hygiene Assn., 450 7th Ave., New York, offers 7 pictures (22 reels) in both 16mm. and 35mm. and at reduced prices for sale and rental.

Special service: If you wish one of the following write the number in ( ) on your business card or letterhead and mail to editor of this department. For *each number a new card or letterhead. (No letter needed.)*

(327)—Catalogue of free industrial and health pictures.

(208)—Catalogue of free industrial pictures.

(54)—Health Movies: How to Use Them, by Dr. H. E. Kleinschmidt. Mimeographed memorandum.

(433)—The Silent Film, by Dr. Iago Galdston. Its value: amateur possibilities. Mimeographed memorandum.

(209)—Catalogue of Eastman Class Room Films—Health Subjects.

(210)—Amateurs now have available a new superspeed 16mm. film. Simplifies picture-taking tremendously according to the description in *Movie Makers.*

UNEMPLOYMENT

Under "Tea, Coffee, Cocoa and Other Beverages," *Hygeia* (June, 1931) has a paragraph on symptoms of scurvy and pellagra reported in connection with bread lines. (*Copy free.* Address: 535 N. Dearborn St., Chicago.) Health workers will wish to be ready with information together with helpful minimum diet information issued by Dept. of Agriculture, Washington, and other sources.

Mental Hygiene Bulletin (450 7th Ave., New York, May, 1931) tells about a discussion of mental attitudes as a factor in the current economic slump, a meeting called by Illinois Society for Mental Hygiene. *Copy free.*

Balanced Menus for the Modest Budget—Cleveland Health Council, Federal Reserve Bank Bldg., Cleveland, 2-page letter size sheet. Mimeographed. Well done as to content and inexpensive form. *Free.*

RADIO

Have you had a first aid series via radio? A vacation series—with usable suggestions as to where to go and what to do as well as warnings against what not to do? How to dodge poison ivy? How to get sunburn safely? When typhoid inoculation is desirable?

The past winter the radio talks of Canadian Social Hygiene Council were broadcast in French over CKAC by *La Presse*, which also summarized them in its columns.

Manitoba Dept. of Health and Public Welfare reports:

> One gratifying result of sending written copies of the radio talks provided by the department, to those who ask for them—is learning about the various uses that are being made of them. A school principal writes that he keeps them in a loose-leaf notebook on the reading table for his high school pupils. The president of a "Parent-Teacher Association" uses them to prepare for the health discussions that are held at every meeting, etc.

The U. S. Public Health Service will present this month a report on health broadcasting at the international conference on educational broadcasting to be held in Vienna. For this report the following questions were put to state and local health authorities:

> (1) Does your department issue broadcasts on public health or personal health subjects? (2) How long have such broadcasts been issued? (3) At what intervals? (4) From what stations? (5) What other agencies, such as medical societies or civic organizations, in your vicinity sponsor material on these subjects for broadcasting? Medical societies were asked—What other agencies, such as voluntary health organizations or civic organizations, in your vicinity sponsor material on these subjects for broadcasting?

The *Journal* question, "Do you do anything beyond straight talks in broadcasting?" is answered by Dr. Lila O. Burbank, Division of Adult Hygiene, Mass. Dept. of Public Health:

> Our Radio Health Forum is conducted weekly and is not a "straight" talk since the service consists of questions from the public and answers to them prepared by either physicians of the Massachusetts Department of Public Health or other experts not of the department. Usually a foreword on some phase of public health is given followed by the questions and their answers—about 1,400 words in all. Sometimes some of the questions are answered by mail since the queries are not of sufficient public interest to give over the radio. The practical evidence we have that the broadcasts are listened to is the fact that questions do come in to be answered. We are trying, by substituting questions on health and the prevention of disease for those not suitable for the radio, to educate the people to the kind of questions it is within our province to answer.

Massachusetts has been running three weekly broadcasts: Wednesday at 5:20 p.m. a series jointly sponsored by the State Medical Society; Friday at 12:30 p.m. a State House Broadcast, which included a series of 9 talks on Department activities; and the Radio Health Forum Fridays at 4:50 p.m.

Thanks Due the Editor?—The newspaper editor is a specialist in what people will read in a daily publication. Like all specialists he is not infallible, but as a rule he knows.

The short cut to getting health material into newspapers is via better and better copy. Sometimes editors are too willing to help the health movement and actually print material of doubtful reader interest. Thanks be to the editor when he drops that copy into his waste basket.

When our copy fails to appear we may well believe that it was not readable enough, *or that it was kept out by one of the innumerable exigencies which arise hourly in a newspaper office*. Any newspaper of any significance receives daily several times as much material as it can use.

BOOKS AND REPORTS

Health on the Farm and in the Village. *A Review and Evaluation of the Cattaraugus County Health Demonstration with Special Reference to Its Lessons for Other Rural Areas—By C.-E. A. Winslow. New York: Macmillan,* 1931. Price, $1.00.

The book is a comprehensive report of the methods and results of a pioneer experiment lasting over 7 years. In this experiment there was an attempt made to extend the facilities of modern medical science to a rural community. From its nature it should be of interest to public health men and to practical social service workers in rural communities. This latter aspect, i.e., social service, also finds treatment.

The book is written from an optimistic point of view, and the author's economics used in computing returns on the investment in public health are orthodox, even if questionable.

For anyone contemplating an attempt to organize a county health program, this book will offer quite valuable guidance, giving as it does, details of organization and describing machinery for a fairly successful attempt as well as pointing probable obstacles.

The first chapter is a good summary of the outstanding lessons of the demonstration. ALLEN E. STEARN

How the Nurse Can Help with the Cancer Problem—*For Distribution by the New York City Cancer Committee, 34 East 75th St., New York, N. Y.* 30 pp.

This excellent leaflet begins with a consideration of the control of cancer in general, following which there are articles by specialists on cancer of the skin, breast, and uterus. The longest article is devoted to "The Nursing Care of Cancer Patients." Its source guarantees the accuracy of its contents.

It is distributed free to nurses and interested groups. M. P. RAVENEL

The Vitamins—*By H. C. Sherman and S. L. Smith. (2d ed.) New York: The Chemical Catalog Company, Inc.,* 1931. 575 pp. Price, $6.00.

The scientific and technologic monographs of the American Chemical Society series are welcomed by chemists and other scientists for their assistance in coördinating and extending knowledge otherwise available only in numerous journals. The vast amount of research, the complexity of the subject, and the diversified character of the chemical nature of vitamins results in a widespread need for a concise, readable, and accurate presentation, which is here given.

The first edition of this monograph covered practically all the important literature on vitamins to the end of 1921. This edition summarizes the knowledge since acquired regarding the chemical nature of the individual vitamins—their rôles in life processes, their formation and distribution in nature, their relative abundance in different food materials, their stability under different conditions, as well as the processes for their extraction and concentration.

Separate chapters are devoted to each vitamin. The book begins with a General Introduction to the Vitamin Theory.

The complex nature of the vitamin originally known as B is discussed in two chapters. The controversy over the two factors now recognized and the

various approaches to the methods of adsorption, extraction and separation are clearly given. That other factors are concerned in the nutrition of mammals, and may be recognized as additional vitamins, is predicted.

The need of vitamin C in metabolic processes is shown in its antiscorbutic properties, and its effect on teeth and bone formation. Only recently have we known of the comparative antiscorbutic values of the different foods. The determination of the protective dose of vitamin C against scurvy is of considerable interest in that it has been found by some workers that the minimum protective dose for the teeth is almost exactly twice that for protection against the more familiar symptoms of scurvy. If it becomes established that this represents the true difference between tooth and general body requirement, the antiscorbutic values need only be multiplied by 2 to change them into tooth protective values.

Observations on disease resulted in the discovery of vitamins B and C. The failure to secure normal growth in experimental animals on purified food materials gave rise to the conception of fat soluble vitamin A. The term vitamin A, in the monograph, covers both the precursor form (carotene) and the form immediately active in animal nutrition. Both land and water plants synthesize the vitamins, and from them, animals, including fishes, derive their supplies. The intensely yellow carotene synthesized in plants is more or less completely converted into the almost colorless vitamin A in the animal body.

The antirachitic vitamin D is a calcium and phosphorus mobilizing factor, and thus exerts a distinct influence on the anatomic elements of the growing bone, but neither it nor ultra-violet light can replace an actual deficiency in these elements. A ration which produces rickets in rats can be rendered antirachitic by exposing it to ultra-violet light. The production of vitamin D by irradiation of ergosterol is discussed.

The recognition of the distribution in plant and animal substances of vitamin E, its function in maintaining fertility, as well as other knowledge about it, are given in the last chapter. This vitamin is found widely distributed in foods, and only a very small amount is needed for its special function.

The authors have succeeded in presenting in concise form, through selection of experimental evidence, the present status of the knowledge concerning vitamins. An excellent bibliography, as well as an author and subject index are appended. ESTHER W. STEARN

Calidad Bacteriologica de las Aguas de Caracas, Venezuela, S. A., y Metodos Modelo Para el Analisis de Agua y Alcanta-Rillado—*Seccion Bacteriologica*, 1930. Caracas, S. A. 50 pp.

Dr. E. I. Benarroch publishes the results of the bacteriological analyses of the waters of the public supplies in Caracas, Ven., S. A. Although incomplete, as the author states in his paper, these analyses give a thorough idea of the poor quality of water in Caracas. A brief summary in English is published.

The second part is a fairly good Spanish translation of the Bacteriological Section of the *Standard Methods for the Examination of Water and Sewage* (6th ed.), 1925, published by the A. P. H. A.—Some words like " fiola " are not used in pure Castillian and must be changed.

This translation is to be recommended to Latin-American laboratory workers and a complete translation into Spanish of the whole *Standard Methods* is desired.

En un folleto de cincuenta páginas, el Dr. E. I. Benarroch publica los resultados obtenidos de los análisis bacte-

riológicos de las aguas de los abastos públicos de Caracas, Venezuela, América del Sur, con los que, aunque incompletos como el mismo autor lo indica, se puede tener una idea clara de la mala calidad de esas aguas, desde el punto de vista bacteriológico.

La segunda parte del folleto es una buena traducción de la Sección de Bacteriología, de los Métodos Modelo para el examen de aguas y alcantarillado—6a. edición 1925—publicados por la Asociación Americana de Salubridad. En su lectura se encuentran algunas palabras como "fiola" que no son usadas en castellano puro y deben ser cambiadas.

Este trabajo es de recomendarse a los laboratoristas latino-americanos y es de desearse una traducción completa—de los Métodos Modelo que ayudará a la unificación de los procedimientos de análisis de las aguas.

A. DE LA GARZA BRITO

The Home Care of the Infant and Child—*By Frederick F. Tisdale, M.D. New York: William Marrow & Co.*, 1931. 292 pp. Price, $3.00.

This is a very attractive and well conceived book in which prenatal and infant care are combined in the one volume. Modern procedures, based upon the scientific work of the last two decades, are set forth in simple understandable language for the average mother.

The book is printed so as to be accessible for ready reference. Each topic is treated with just enough fullness to be explicit, but is not overdrawn. Excellent illustrations add to the practical value of the book. The first three parts deal with prenatal and neonatal care, the care of the baby during the first year of life, and care of the older child.

A feature of this book which should prove especially helpful to mothers and fathers is the last section dealing with special problems such as accident prevention, behavior problems, and the play life of the child. This book is recommended to parents who desire definite, scientific consideration of their children's health problems. R. A. BOLT

First Aid for Boys—*A Manual for Boy Scouts and for Others Interested in Prompt Help for the Injured and the Sick—By Norman B. Cole, M.D., and Clayton H. Ernst. (rev. ed.) New York: Appleton*, 1931. 192 pp. Price, $1.50.

This is an excellent guide for Boy Scouts as well as older persons. It is written in language which is easily understood and the directions for first aid are sufficiently clear to be understood by all.

It can be commended for its announced purpose. M. P. RAVENEL

Untersuchung der Nahrungs- und Genussmittell. Allgemeine Methoden—*By Dr. Wilhelm Plücker. Berlin: Urban & Schwarzenberg*, 1931. 1046 pp., 295 figs. in text. Price, bound, M. 59.

Tabellen- und Rechenbuch für Nahrungsmittelchemiker. *By Dr. Wilhelm Plücker. Berlin: Urban & Schwarzenberg*, 1931. 231 pp. Price, bound, M. 22.

These two works which are also incorporated in Abderhalden's *Handbuch der biologischen Arbeitsmethoden*, Abt. iv, Teil 14, cover the field of food chemistry in an exhaustive manner. The entire field is covered except the determination of molecular weights and the detection of preservatives, treated elsewhere in the *Handbuch*. The opening sections deal with general procedures. Biological methods follow, including the detection of arsenic, the precipitin reaction for honey, and serological methods in the separation of cereals, vegetable oils, horse fat, and the various sugars. The chemical methods elaborated in great detail are concerned with the volatile oils, al-

cohols, aldehydes, ketones, esters, and acids, with the amines, amino acids, albumins, nitrogen-free extractives, coloring matters, fats, carbohydrates, lipoids, mineral matters, rarer bases and acids, and water determination. The physical methods discussed include agitation, extraction, colorimetry, distillation, dialysis, decolorization and clarification, extraction of solids, filtration, fluorescence, freezing point, critical solution temperatures, conductivity, microanalysis, nephelometry, solubility, polarization, refractometry, spectroscopy, crystallization, determination of melting and boiling points, specific gravity, ultrafiltration, viscosity, and hydrogen ion concentration.

There are lists of reagents for the various fields of analysis and a very fully worked out book of tables and computations for the many types and forms of analysis.

The work is up-to-date, gives the pros and cons for alternative methods, and suggests fields in which improvements in current practice are needed.

CHARLES A. KOFOID

Correction: In June *Journal*, page 704, a review of *Facts and Figures About Tuberculosis* stated that the book was published by the New York Tuberculosis Association. This should have been National Tuberculosis Association.

BOOKS RECEIVED

BIOLOGY IN HUMAN AFFAIRS. Edited by Edward M. East. New York: McGraw-Hill, 1931. 399 pp. Price, $3.50.

DETERMINATIVE BACTERIOLOGY. Vol. II. By K. B. Lehmann and R. O. Neumann. New York: Stechert, 1931. 868 pp. Price, 2 vol., $12.50.

ESSAYS ON MARRIAGE. By Frederick M. Harris. New York: Association Press, 1931. 208 pp. Price, $2.00.

FUNDAMENTALS OF HEALTH. By T. Bruce Kirkpatrick and Alfred F. Huettner. New York: Ginn, 1931. 576 pp. Price, $3.80.

SEEING. A PARTNERSHIP OF LIGHTING AND VISION. By M. Luckiesh and Frank K. Moss. Baltimore: Williams and Wilkins, 1931. 241 pp. Price, $5.00.

CLINICAL DIETETICS. A Textbook for Physicians, Students and Dietitians. By Harry Gauss and E. V. Gauss. St. Louis: Mosby, 1931. 490 pp.

THE INFANT WELFARE MOVEMENT IN THE EIGHTEENTH CENTURY. By Ernest Caulfield. New York: Hoeber, 1931. 203 pp. Price, $2.00.

THE STORY OF HEALTH. By Hope Holway. New York: Harpers, 1931. 150 pp. Price, $1.25.

KANSAS CITY HEALTH AND HOSPITAL SURVEY. Prepared by The Committee on Administrative Practice of The American Public Health Association and the Kansas City Public Service Institute. Kansas City, Mo.: Chamber of Commerce, 1931. 329 pp. Price, $2.00.

INDUSTRIAL ACCIDENT PREVENTION. A Scientific Approach. By H. W. Heinrich. New York: McGraw-Hill, 1931. 366 pp. Price, $4.00.

AMERICAN PHYSICIANS AND SURGEONS. Edited by James Clark Fifield. Minneapolis: Midwest Co., 1931. 1737 pp. Price, $30.00.

ACCIDENTAL INJURIES. By Henry H. Kessler. Philadelphia: Lea & Febiger, 1931. 718 pp. Price, $10.00.

TEXT-BOOK OF MEDICAL DISEASES FOR NURSES, INCLUDING NURSING CARE. By Arthur A. Stevens and Florence Anna Ambler. Philadelphia: Saunders, 1931. 503 pp. Price, $2.75.

THE HOME AND THE CHILD. Subcommittee on Housing and Home Management of the White House Conference on Child Health and Protection. New York: Century, 1931. 165 pp. Price, $2.00.

INTERNATIONAL STUDIES ON THE RELATION BETWEEN THE PRIVATE AND OFFICIAL PRACTICE OF MEDICINE WITH SPECIAL REFERENCE TO THE PREVENTION OF DISEASE. Vol. II. By Sir Arthur Newsholme. Baltimore: Williams & Wilkins, 1931. 249 pp. Price, $4.00.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Baltimore, **Md.**—This city, with an estimated population in 1929 of 841,728, records a birth rate of 16.6, the white rate being 15.1 and the negro rate, 25.2. The total death rate was 13.8, that for the white being 12.2 and for the colored, 23.1. Comparative data for births, deaths, and for specified causes of death, by color, are given for previous years. In 1929, a tuberculosis death rate of 79 was recorded for the white, as compared with 316 for the colored population.

We have found it very profitable in our health work not only to carry the advantages of education to the public as a whole, but also to our working forces in the field. The response by the workers in the several bureaus where Book and Journal Clubs have been formed, has been highly gratifying to their chiefs as it has not only benefitted the field worker but also the directors themselves by increasing their breadth and depth of views of their own special ties.

The laboratory reports indicate that several special investigations of a research nature were conducted, as well as routine work.

In connection with a diphtheria immunization campaign, it is noted that two circular letters were addressed to physicians asking for their coöperation and suggesting that the health department supply the toxin-antitoxin. Communications were sent to all life insurance companies to encourage them to have their agents speak to parents about the procedure. Over 140,000 pamphlets *Your Child Looks to You for Protection* were placed in the hands of the Police Department and were distributed by them in homes in the city. The trolley cars placed T–A–T sign cards in every car to go with an article by the health officer and a list of clinics in *Trolley News*. Immunization clinics were organized and their work was followed up by a Schick team of physicians.

Brookline, Mass.—In the 1930 annual report, a population of 47,730, a birth rate of 11.2, and a death rate of 11.88 are noted. Deaths from heart disease lead the list of causes of death, and number 28 per cent of the total. There were 16 cases of diphtheria, but this was the seventh consecutive year with no deaths from this cause. Of 644 school children Schick tested, 43 per cent were found to be immune to diphtheria, while 467 children previously given toxin-antitoxin were re-tested and 63 were found to be still susceptible and were again given the protective inoculations. In addition, 132 infants were given toxin-antitoxin at the community health center.

There were 17 deaths from tuberculosis with 28 new cases reported (62 in 1929). At 87 clinic sessions, 640 chest examinations were made of 249 individuals of whom 111 were new patients. There were 2,718 home nursing visits made in behalf of tuberculosis cases.

A health bulletin of a popular character is published quarterly and distributed by the Police Department to every house in town. This bulletin serves to inform residents of the quality of milk sold and gives publicity to various health activities conducted in town.

Pittsfield, Mass.—This city of 49,677 population presents an interesting health department report which shows an infant mortality rate of 40.5 for 1930. During the year the Chadwick Clinic made possible the examination of over half the school children, the

Von Pirquet test preceding the X-ray and physical examination. Cases of hilum tuberculosis thus found are sent as rapidly as possible to Westfield for treatment. All retail raw milk, as well as milk for the largest pasteurizing plant, is obtained from tuberculosis free herds. The activities of the health department have been rated by the health officer on the *Appraisal Form* of the American Public Health Association, and show a weighted score of 776 points.

New Jersey—For the fiscal year ending June 30, 1930, the New Jersey Department of Health reports the lowest annual case and death rates from typhoid fever on record for the state, together with an absence of large outbreaks of communicable diseases. There were 16 cases of typhoid fever traced to raw milk. One member of the dairyman's family, who bottled the milk, was found to be a carrier.

Public health services included bacteriological examination of 65,987 specimens for physicians and health officials, an increase of 10 per cent over the previous year. Nearly half of these specimens were for the Wassermann test for syphilis. Diphtheria prevention in rural communities depended largely on the assistance of the department in organizing clinics, arousing public interest, and in giving Schick tests after the toxin-antitoxin treatments were administered by local physicians. There were given in this manner Schick tests to 10,144 persons and toxin-antitoxin to 5,558 individuals. Nurses reporting to the department assisted in giving toxin-antitoxin to 16,465 school children and to 11,388 preschool children.

Transition from policeman to teacher has affected both the work and point of view of health officials. So true is this that nearly every activity of the State Department of Health attempts more or less directly to instruct, interest and lead local officials and citizens to do the right thing for their own well-being and that of their neighbors.

New Britain, Conn.—On the basis of a population of 69,000, a death rate of 8.4 is calculated for 1930. Of 88 infant deaths (rate of 66.6) 50 were among infants under one month of age. A health department expenditure of $.51 per capita is noted. The health officer recommended in his annual report the transfer of garbage collection from the health department, and the inauguration of a diphtheria immunization campaign. The public health laboratory showed an increase in examinations of 38 per cent over the previous year.

Schenectady, N. Y.—An infant mortality rate of 46, much lower than usual, is reported for 1930. Based on a population of 95,652, a general death rate of 11.2 is recorded. In contrast with last year, there has been a falling off in the amount of milk and cream sold in the city. This is believed to be largely due to the depression. A congenital clinic is maintained, to which 11 first visits and 79 revisits were made. Attendance at the tuberculosis clinic numbered 1,228. Other clinic services included prenatal, child hygiene, cardiac, and dental. Among the health officer's recommendations are noted expressed needs of a health education director, a social service worker at the health center, and improved facilities for the care of mental disease cases.

San Diego, Calif.—Tuberculosis control activities among dairy herds, under the supervision of the State Department of Agriculture, resulted in the testing of 12,567 animals. There were 85 reactors to the tuberculin test. A new milk ordinance was passed providing the same standards from outside dairies supplying San Diego as from those in the city and county.

On the basis of a population of 149,423, a birth rate of 16.9 and a resident death rate of 11.1 are reported. The infant mortality rate in 1930 was

49.3. There were 74 deaths in the city resulting from automobile accidents. Of this number 57 were from accidents which took place within the city limits. There were 1,384 personal injuries resulting from motor vehicle accidents occurring in the city, as compared with 1,042 the previous year.

The California school code requires that instruction be given in elementary and secondary schools on the subjects of public safety and accident prevention. A 195 page book, *Course of Study in Safety Education*, published by the automobile club of Southern California, is used in this connection.

Edmonton, Alberta—Edmonton reports for 1930 a general death rate of 6.8 and an infant mortality rate of 48.9, both low records. Cancer was the leading cause of death with heart disease and tuberculosis following in order. This city of 80,000 people reports only 9 cases of diphtheria, with no deaths from this disease, " an outstanding proof of the value of the diphtheria prevention treatment carried out in recent years."

A summer camp was organized by the Kinsmen's Club for childhood contacts of tuberculosis cases, and a graduate nurse was in charge of the six weeks' camp. Under the direction of the Provincial Department of Health, 2 child welfare clinics were held weekly with an attendance of 5,286, an increase of over 600 over the previous year. A course of 16 lectures on public health topics was arranged for the benefit of the staff and others. This report contains an excellent organization chart showing the community health services.

Prevention of Blindness—The cooperation of a wide diversity of organizations throughout the United States in the steadily expanding movement to prevent blindness and conserve vision is emphasized in the sixteenth annual report of the National Society for the Prevention of Blindness.

The society realizes more than ever that it can function completely only when it is working closely with all agencies interested in any aspect of saving sight—medical, educational, social welfare, and industrial.

It has been the constant aim of the society to encourage and participate coöperatively in the field of research into the causes of blindness. Among the major causes are glaucoma and trachoma, both of which, it is felt, can be appreciably reduced.

Continuing the study undertaken in coöperation with the Massachusetts Eye and Ear Infirmary and Harvard University Medical School on the effect of adequate social service follow-up in connection with glaucoma patients, the number of glaucoma cases now registered in the clinic at Boston is perhaps greater than ever registered in any glaucoma clinic. There has been also a continual demand for the society's special pamphlet on glaucoma.

The granting of $250,000 by the Commonwealth Fund permits Washington University, St. Louis, to undertake study of the etiology and control of trachoma. It is felt that once the real cause of trachoma is definitely established, it will be possible to wipe out a great cause of blindness which affects almost every country in the world. The society is called into consultation with those working on the trachoma problem, and there is a constant demand for its literature.

As part of its White House Conference project, the society compiled information and statistics on existing legislation providing special classes for conserving the sight of school children and offering financial aid for their maintenance. A special report was given to the Sub-Committee on Special Classes for Education of the Blind and Partially Seeing Children, on all phases of sight-saving classes —growth, health of the pupil, methods of administration, supervising, teacher training and vocational guidance.

The formulation of a " Program for 100 Per Cent Eye Protection in Industry " has been begun. This, when it has been completed, will be presented in the form of a self-appraisal for safety engineers and other executives concerned with the conservation of vision in industry. It is the opinion of the society and of numerous safety engineers consulted in the matter that such a program intelligently and conscientiously applied to even the unusually hazardous industries will help considerably to eliminate industrial eye

accidents, one of the most serious causes of blindness.

During the year, through the auspices of the Medical Social Service Section of the Welfare Council of New York City and the Associated Out-Patient Clinics, a committee on development of social service in eye clinics was formed. This committee, of which several staff members of the society are members, arranged a series of study conferences on eye diseases and defects of especial interest to medical social eye workers.

In conjunction with the American University at Cairo, Egypt, the society sponsored a two-reel motion picture which points out the importance of care of the eyes early in life, treatment of trachoma, and methods of protection against industrial eye hazards. It also assisted the Near East College Association by preparing a complete set of exhibit material for a health education program in Syria.

The report indicates a continued reduction in the amount of blindness resulting from ophthalmia neonatorum, usually called "babies' sore eyes," and attributes this to the use of prophylactic drops in the eyes of babies at birth, as required by law in most states. The number of "sight-saving" classes for school children with defective vision has grown to 375, but several thousand more are needed.

Approximately 500,000 of the society's publications were distributed during the year, staff members lectured in more than 100 cities in 21 states, and nearly 25,000 letters were sent in answer to inquiries from all parts of the country regarding a large variety of technical and general problems connected with the preservation of good eyesight.

Trenton, N. J.—Credit is due this city for a carefully prepared and well printed annual report for 1930. Among the outstanding developments of the year are noted the establishment of a mental hygiene clinic, the promulgation of a new ordinance regarding the sale on the streets of certain manufactured foodstuffs, and a provision for the reporting to the Health Department by physicians of persons bitten by a dog, cat, or other animal in connection with the state act for the "Prevention and Control of Rabies."

Up to the end of 1929, the Schick test was given to 12,571 public school children. Of this number, 6,571 were inoculated with toxin-antitoxin, 6,151 gave a negative reaction, and 1,843 were treated without having been previously Schick tested. Of 1,235 previously treated children who were re-Schicked, 1,046 gave negative reactions. Another group of 3,701 previously treated school children were re-Schicked and 2,915 gave negative reactions. In addition, 4,153 parochial school children have been given toxin-antitoxin. This report is well illustrated with statistical tables and charts.

Marion County, Ore.—Following an organization chart and a personnel statement, the 1930 report of the Marion County, Ore., Department of Health lists in a comprehensive manner 15 community health services. An effective cut from the A. P. H. A. *Syndicated Health Bulletin* with the caption, "Ounces of Prevention," directs attention to the economic losses due to illness which may be prevented.

For the calendar year, the lowest infant mortality rate for the county (36.4) is recorded, together with an increase in the number of young children protected from diphtheria, the passage of a modern milk ordinance for Salem, marked improvement in venereal disease control, and an honor rating for Salem in the Inter-Chamber health conservation contest of the U. S. Chamber of Commerce. This report of 23 pages illustrates the value of good headings and subheadings and careful preparation.

Kansas—The 15th biennial report of the State Board of Health of Kansas for the period ending June 30, 1930, opens with an organization chart showing the official activities and listing 6 coöperating agencies. Several charts and reproductions of health posters awarded prizes in the high school contest add interest to the report. The diphtheria eradication program has resulted in the administration of toxin-antitoxin to not less than 340,000 children besides an estimated number of 110,000 protected by private physicians. A change in deaths from diphtheria by age groups is noted for a period of years, 68.6 per cent in 1928 being in children under 10 years of age as compared with 80.7 per cent for the 10-year period 1916–1925.

The lowest death rate from tuberculosis of 35.1 was recorded in 1927, and the second lowest of 38.2 in 1929. The Health Department and Other Reports second lowest infant mortality rate of 57.3 was recorded in 1929, the lowest rate, 54.1, having been noted in 1927. At the close of the fiscal year 1930, 11 counties in the state were operating under the plan of full-time health protection. Two schools for health officers and public health nurses were held during the reported period. These were made possible through the coöperation of the U. S. Public Health Service and voluntary agencies.

Bermuda—A very interesting report of the health and sanitary conditions of Bermuda has been prepared for the year 1930 by the Director of the Medical and Health Department. This report shows that, except for an epidemic of measles, the year was a reasonably healthy one. Most of the measles cases were mild. There were 54 cases of diphtheria reported, with 9 deaths. Of the total cases, 27 were white persons, and 26 were persons under 18 years of age. In 1929, 1,730 children were given immunizing treatments against diphtheria, and only one of this number subsequently developed the disease. "An outbreak of diphtheria does but half its damage outright. It leaves bacilli tucked away in the noses or throats of its previous victims or of people who have been in contact with them." Emphasis is given to the importance of immunization measures.

There were 8 cases of typhoid during the year, with 1 fatality. In seeking the source, a carrier was discovered. There were 13 cases of tuberculosis reported and 11 deaths from this disease. In the construction program of the King Edward Hospital is a new isolation building which may also accommodate the few tuberculosis cases needing hospitalization.

The population of 31,211 is made up of 16,400 colored and 14,811 white persons. The area of Bermuda covers 19.5 square miles. During 1930, there were 565 births among colored and 224 among white persons, giving a total birth rate of 25.2. A general death rate of 9.99 is recorded, with an infant mortality rate of 76.

Active control measures against the breeding of rats, mosquitoes and flies are described. An active program of health education in schools has been instituted. It is also gratifying to note a movement for several dairies to coöperate in the pasteurization and delivery of milk.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH. D.

Health Status of Negro Industrial Employees—Among a group of 1,000 negro factory workers, over 900 were found to have serious physical defects, and all but 3 would profit by early medical care.

ALLEN, F. P. Physical Impairment Among One Thousand Negro Factory Workers. J. Indust. Hyg., 13, 5: 157 (May), 1931.

The Lubeck Disaster—Was a culture of virulent tubercle bacilli added to the BCG stock, or did BCG recover its virulence under the cultural methods employed in the Lubeck laboratory? This question remains unanswered in what seems to be an unprejudiced review of the regrettable affair. "The moral, however, is plain. The preparation of vaccines for large-scale distribution should be undertaken only under the most rigidly controlled conditions in laboratories set aside for this and for no other purpose."

ANON. The Lubeck Catastrophe. Brit. M. J., 3674: 986 (June 6), 1931.

Refuse Incineration—Fundamentals of furnace design, plant location, and operating procedures are touched upon to serve as a guide to municipalities facing refuse incineration projects.

BARTLEY, R. J. Factors in the Incineration of Community Refuse. New York State J. Med., 31, 11: 679 (June 1), 1931.

Pasteurized Milk and Nutrition—To counteract raw milk propaganda based upon unscientific evidence, this committee quotes several studies which find pasteurized milk the nutritive equivalent of raw milk, and urges the U. S. Public Health Service to settle the question once and for all.

BROWN, E. G. Report of Committee on Milk. Pub. Health Rep., 46, 25: 1455 (June 19), 1931.

Tuberculosis Prevention Today—Reviewing the newer knowledge of tuberculosis, the author points out reasons for the present-day emphasis on the prevention of childhood infection, the improvement of child health, and to this end, the general betterment of health education.

GALDSTON, I. The Newer Aspects of Anti-Tuberculosis Work. New England J. Med., 204, 25: 1303 (June 18), 1931.

Next Steps in Child Hygiene—Beginning in the field of sanitation, child health has passed through the same stages of development as other health promotional activities, the goal being stated in the findings of the White House Conference.

HAINES, B. M. The Maternal and Child Hygiene Program of the Future. Where and How Shall the Emphasis be Placed? Pub. Health (Mich.), 14, 6: 123 (June), 1931.

Epidemiology of Undulant Fever—Evidence is presented indicating a high incidence of past Brucella infections in persons, not in contact with cattle, presumably transmitted by raw milk. Highest ratios were found among veterinarians, farmers and meat packers.

JORDAN, C. F. Infection in the Epidemiology of Undulant Fever in the General Population and in Selected Groups in Iowa. J. Infect. Dis., 48, 6: 526 (June), 1931.

Diphtheria in Two Large Cities—This statistical study of diphtheria mortality rates in Philadelphia and New York shows the 1930 rate in both cities too far below the anticipated level to be attributable to chance. The relation-

ship of rates and age grouping considered in the light of immunization practices is significant.

LEE, W. W. Diphtheria Immunization in Philadelphia and New York City. J. Prev. Med., 5, 3: 211 (May), 1931.

Avoiding **Health Nostrums**—"In general leave your health alone. . . . You can influence it a little more than you can influence the weather, but not much more. . . . There is no better general guide to food choice than healthy hunger." Why do writers feel called upon to travel the route indicated by these quotations in order to warn against quackery and health nostrums?

LYON, E. P. Science and Health. Graphic Survey, 66, 5: 265 (June), 1931.

Why **Cancer Clinics?**—The opportunities of the cancer clinic made clear for the intelligent public. Well done.

MATTICK, W. L. The Value of the Cancer Clinic to the Community. New York State J. Med., 31, 11: 696 (June 1), 1931.

Faulty **Nutrition Results**—"Properly fed animals remain remarkably free from disease; improperly fed animals are remarkably subject to it. It is reasonable to assume that the human species is no exception to this rule." Words of wisdom concluding a scientific demonstration conducted at the other side of the world.

MCCARRISEN, R. Some Surgical Aspects of Faulty Nutrition. Brit. M. J., 3674: 965 (June 6), 1931.

Body **Mechanics**—Functional health is greatly influenced by body mechanics and poor posture can be converted into good by adequate training, so says this article.

OSGOOD, R. B. Body Mechanics and Posture. J. A. M. A., 96, 24: 2032 (June 13), 1931.

Rural Children's Health—Sampling rural children the country over, this survey finds the West and Northeast ahead in health and dental examinations and immunizations. As a whole the rural children are woefully unprotected against smallpox.

PALMER, G. T. Preventive Medical and Dental Service for Preschool Children. Child Health Bull., 7, 3: 87 (May), 1931.

Rural Health Service—For combined health districts in rural and suburban Massachusetts, the minimum program includes communicable disease control, child health, sanitary inspection, statistical records and health education. The organization necessary for this service is discussed.

SCAMMAN, C. L., and KNOWLTON, W. K. Health Service for the Small Community—Its Development in Massachusetts. New England J. Med., 204, 23: 1184 (June 4), 1931.

Health Work in 1950—A British M. O. H. embarks upon a flight into the future to describe the work of the sanitary inspector of 1950. We should like to see the effort of some American sanitary Jules Verne on the same subject.

SYMONS, A. D. The Metamorphosis of Martha or Leaves from the Life of a Sanitary Inspector. Med. Off., 45, 23: 264 (June 6), 1931.

Streptococcus Studies—A demonstration illustrating the impossibility of separating by available methods the streptococci associated with septic sore throat and scarlet fever into definite groups related to the particular type of infection.

WHEELER, M. W. Streptococci Associated with Epidemic Septic Sore Throat; Their Relationship to Streptococci Associated with Scarlet Fever. J. Prev. Med., 5, 3: 181 (May), 1931.

NEWS FROM THE FIELD

BELGIAN CHILDREN ORPHANED BY INDUSTRIAL ACCIDENTS

A LAW recently enacted in Belgium provides for a national bureau for the care of minor children who have lost the support of the family breadwinner through industrial accident. The bureau is directed to supervise in their behalf the enforcement of the child welfare laws, especially the administration of pensions awarded under the workmen's compensation law and of their property in general, to give pecuniary aid or aid in kind when needed; and to watch over their general education and vocational training.

The bureau is to be represented by local committees in the Provinces and cities. Through these committees welfare visitors of suitable education, experience, and character will be appointed to advise the child's mother or guardian and to supervise the child's general well-being. These visitors will serve without remuneration. Women are preferred for the work in the case of young children.—*Oeuvre Nationale de l'Enfance*, Revue Mensuelle, Brussels, Feb. and March, 1931.

FIRST NATIONAL CONGRESS ON SOCIAL SERVICE FOR CHILDREN, ARGENTINA

THE first national congress on social service for children in Argentina will be held in Buenos Aires, September 20 to September 26, 1931.

Its purpose is to study the various problems of child welfare and methods of their solution. Among the subjects mentioned in the program are: Treatment of the defective and delinquent child; effect on child of the mother's employment outside of the home; training of social workers; establishment of a council of social agencies and of a social service exchange in Buenos Aires.

The president of the congress will be Dr. G. Araoz Alfaro, President of the National Department of Hygiene.—*Boletín de la Oficina Sanitaria Panamericana*, Washington, May, 1931.

POWDERED MILK FOR PORTO RICO

FOLLOWING suggestions by Dr. S. J. Crumbine, Prof. H. C. Sherman, and other scientists, that one of the greatest public health needs of Porto Rico is an adequate supply of American canned milks, employees of The Borden Company of New York have donated 2,700 pounds of Klim Powdered Whole Milk for this purpose. This shipment, equivalent to nearly 11,000 quarts of fluid whole milk, will be distributed to the child welfare stations in Porto Rico. At these stations Klim has been used for infant feeding for more than a year, but lack of funds has recently caused the closing of a number of the clinics.

HOMICIDES IN NEW YORK

THE number of homicides in 1930 in the State of New York, 698, and the rate per 100,000 population, 5.5, were the highest ever recorded. As compared with 1929, the number of homicides in New York City increased from 425 to 494 while in the rest of the state there was a drop from 220 to 204.

AMERICAN HOME ECONOMICS ASSOCIATION

THE American Home Economics Association held its 24th annual meeting, June 22–27, in Detroit, Mich., with an attendance of 1,500.

Among the speakers were Dr. F. J. Kelly, Chairman, Education Section,

White House Conference; Prof. John Sundwall, University of Michigan; Francis C. Davis, Merrill Palmer School; Wells A. Sherman, U. S. Bureau of Agricultural Economics; and Edith Hale Swift, American Social Hygiene Association.

Mary P. Connolly, Director, Division of Health Education, Department of Health, Detroit, attended the meeting as official representative of the A. P. H. A.

SOUTH CAROLINA MILK

THE Borden Company has decided upon establishing a large plant to manufacture powdered milk somewhere in South Carolina. This decision is due to a recent conference between Dr. L. J. Auerbacher of the Borden Milk Co. and Dr. William Weston, Director of the South Carolina Natural Resources Commission.

Dairy studies have proved that South Carolina milk contains a high content of iodine and other properties especially beneficial to children.

WALTER BURNS SAUNDERS MEMORIAL MEDAL

THE third award of the Walter Burns Saunders Memorial Medal for outstanding service to nursing will be made in April, 1932, at San Antonio, Tex., during the convention of the three national nursing organizations. The first award was made posthumously at the biennial convention of 1930, to S. Lillian Clayton, former President of the American Nurses' Association, and the second presentation of the medal was made to Mary Sewell Gardner of Providence, R. I., in May, 1931.

CANADA-UNITED STATES RECREATION CONGRESS

THE Canada-United States Recreation Congress will be held in Toronto, October 5 to 9. This is the eighteenth such gathering sponsored by the National Recreation Association, but the first in Canada where progress in public recreation has been rapid during the past 10 years.

The Earl of Bessborough, Governor General of Canada, has agreed to serve as honorary patron of the conference, and Richard B. Bennett, Prime Minister of the Dominion, is the honorary president.

THE HOME AND THE CHILD

ANNOUNCEMENT is made of the publication of *The Home and the Child*, covering the findings of the Subcommittee on Housing and Home Management of the White House Conference on Child Health and Protection. This volume of 165 pages presents the recommendations of the subcommittee in regard to housing, furnishings and equipment, the management of home activities, the management of income, and clothing. It is published by The Century Co. The list price is $2.00.

ASSUMPTION PARISH CHILD HEALTH CAMPAIGN

A PARISH-wide meeting was held in Napoleonville, La., for the awakening of interest in ways and means of correcting defects found in school children during the past school year. Arrangements were made for a bus-load of children to be transported to Charity Hospital on each of four dates during the summer for tonsillectomies.

GORGAS ESSAY CONTEST

HELEN DALE, a recent graduate from Point Loma Junior-Senior High School in San Diego, Calif., was awarded the Charles R. Walgreen Prize of $500 for the winning essay in the Third Annual Gorgas Memorial Essay Contest. The subject this year was "Keeping Fit: The Gorgas Program of Personal Health."

AMERICAN RED CROSS ROLL CALL

THE Fiftieth Anniversary Roll Call of the American Red Cross, to enroll members for 1932, will be held from Armistice Day to Thanksgiving, November 11 to 26, 1931.

CHINA'S PUBLIC HEALTH

PLANS for the development of public health education in China, in which W. W. Peter, M.D., Dr.P.H., Fellow A. P. H. A., is serving temporarily as technical expert, are published in the June issue of *The Cleanliness Journal*.

Dr. Peter, who was at one time associate secretary of the American Public Health Association and is now director of Health Service of Cleanliness Institute, is on 8 months' leave of absence at the request of the Chinese Government. Previously he spent 15 years in China and was director of the China Council on Health Education.

MOBILE HEALTH UNIT

A MOBILE health unit is the latest in health activities in West Virginia. The unit consists of a trained public health officer and a public health nurse. Under the present plan this unit will visit those counties in the state where there is no established health work, with a view to organizing committees and putting on a demonstration which will not only show the citizens the value of health work but will also give the rural children the same health protection which is being given others in the state. Dr. R. H. MacLeod has been secured as head of this unit.

NATIONAL SOCIETY FOR PREVENTION OF BLINDNESS APPOINTS NEW DIRECTORS

THE National Society for the Prevention of Blindness has announced three new appointments to the Board of Directors—Dr. John M. Wheeler, Professor of Ophthalmology in the Medical School of Columbia University, Mary Antoinette Cannon, of the New York School of Social Work, and Dr. A. B. Meredith, Professor of Education at New York University.

INTELLIGENCE OF DRUG ADDICTS

DRUG addict prisoners who have committed offenses against the United States, and who are no longer taking drugs, show, according to preliminary studies of the U. S. Public Health Service, a greater proportion of above average intelligence than is observed among non-addict prisoners.

Among the drug addicts studied, 30 in every 100 were above average in intelligence, whereas 18 in every 100 prisoners not addicted to the use of drugs were above the average in intelligence. On the other hand, 17 in every 100 drug addict prisoners were considered to be normal but of dull intelligence, whereas 1 in every 10 addict prisoners was mentally defective and 1 in every 6 among the non-addict prisoners was mentally defective.

MALNUTRITION AND ECONOMIC DEPRESSION

TO students of public health the increase in disease as the result of unfavorable economic conditions has long been known. In this city we have been watching for evidence of the effect of the current economic depression, and we have already observed an unfavorable influence on the incidence of tuberculosis.

A survey of the health of school children recently completed affords another example of the influence of the economic depression. The survey included 2,835 school children examined for evidences of malnutrition in 15 public schools in the Borough of Manhattan. The findings were compared with the results obtained in the examination of 1,881 children in these same schools in 1929. In 1929 the examination of 1,881 children

showed 19 per cent to be suffering from malnutrition; in 1930 the examination of 2,835 children in the same schools showed 25 per cent to be classed as cases of malnutrition.—*Weekly Bull.*, Dept. of Health, City of New York, XX, 16 (Apr. 25), 1931.

TRICHINOSIS

TWO farmers in the western part of the State of New York bought a 320-pound hog and had it butchered. The day after they made it into sausages and they and members of their families sampled the raw sausages and again when partly cooked on that day. These farmers also sold some of the sausages to a number of nearby families during the next 10 days to 2 weeks.

An outbreak of 24 cases of trichinosis followed. Besides the two farmers who had purchased the hog, members of their own, as well as of 8 other families, contracted the disease.

The symptoms were those of gastro-intestinal disturbance, together with rise in temperature, edema of eyelids, and deep-seated muscular pain. A high eosinophil count was also reported. Trichinae were found on biopsy and also on microscopical examination of part of the sausage and of the head of the hog.

Thorough cooking of all pork and pork products is the only sure safeguard against contracting trichinosis.—*Health News*, May 11, 1931, New York State Dept. of Health, Albany, N. Y.

DENTISTRY IN AMERICA

WITH 67,000 dentists, 1 to every 1,700 persons, America leads the world in dentistry and dental training, according to the Office of Education, U. S. Department of the Interior, in spite of the fact that it has been estimated that only one-fourth of the American people receive dental service.

Thirty-eight institutions in the United States offer professional training in dentistry, 31 of which are rated Class A, 6 are rated Class B, and 1 is unclassified. The first dental school in the world was Baltimore College of Dental Surgery, which gave instruction leading to the D.D.S. degree and graduated 2 students in 1841.

PERSONALS

DR. SHIBASABURO KITAZATO, noted bacteriologist of Tokio, Japan, died June 13. He was a member of the American Society of Tropical Medicine, of the International Society for Scientific Research, and was honorary president of the Japan Medical Society.

MRS. FRANCES RICHARDSON BIGGS, widow of the late Dr. Hermann M. Biggs, former New York State Health Commissioner, died suddenly of heart disease May 30.

Mrs. Biggs shared actively in her husband's concern for the protection of the public health. She was president of the National Federation of Day Nurseries and vice-president of the Stony Wold Tuberculosis Sanatorium at Lake Kushaqua. She was an Associate Member of the American Public Health Association.

E. G. EGGERT, formerly of the Texas State Department of Health in Austin, is now Assistant Engineer, Georgia State Health Department, Albany, Ga.

DR. W. T. HENSHAW has been reappointed State Health Commissioner of West Virginia, as announced by Governor William G. Conley.

NEW HEALTH commissioners in Ohio include a change in a general health district and an appointment in a new city under the 1930 census. Dr. Henry R. O'Brien, Lorain County, at Oberlin, succeeds Dr. C. D. Barrett; and James Hobson is the Health Commissioner at Mingo Junction.

DR. W. F. DRAPER has recently been appointed by Governor Pollard of Virginia as the new State Health Commissioner of Virginia. Dr. Draper succeeds the late Dr. Ennion G. Williams, who for over 25 years served as the Health Commissioner of the state and died June 6.

DR. HAIM YASSKY, who has been serving as Acting Director of the Hadassah Medical Organization in Palestine, has recently been appointed Director.

DR. EUGENE LYMAN FISK, medical director of the Life Extension Institute of New York and a pioneer in public health promotion work, died unexpectedly in Dresden, Germany.

Dr. Fisk had been medical director of the Life Extension Institute since its organization in 1913 as a result of a movement headed by former President William H. Taft, Professor Irving Fisher, of Yale, and Harold A. Ley. He has been a member of the A. P. H. A. since 1915 and became a Fellow in 1922.

WILLIAM S. KEISTER, M.D., of the Maryland State Health Department, died July 3.

Since his graduation from Johns Hopkins Medical School in 1914 Dr. Keister had served with distinction in the U. S. Public Health Service and in various state health agencies. He has been a member of the A. P. H. A. since 1913.

CALVERT L. ESTILL has become director of the West Virginia Department of Public Welfare, which was created by the last legislature.

JOHN A. THABES, M.D., of Brainerd, Minn., has been elected President of the Minnesota State Board of Health.

DR. HARRY A. REESE, Health Officer of Yuma, Ariz., and member American Public Health Association, was appointed President of the Arizona State Medical Association at its annual meeting, May 7, 1931.

LEO STEIN, formerly vice-president, has been elected president of the New York League for the Hard of Hearing, Inc.

CONFERENCES

July 27–August 2, The World Federation of Education Associations, Denver, Colo.

August 3–8, International Congress of Industrial Accidents, Geneva, Switzerland.

August 3–8, International Dental Congress, Paris, France.

August 31–September 4, International Neurological Congress, Berne, Switzerland.

September 7–8, International Association of Preventive Medicine, The Hague, Holland.

September 7–10, International Congress for Studies Regarding Population, Rome, Italy.

September 14–17, Sixtieth Annual Meeting, American Public Health Association, Montreal, Canada.

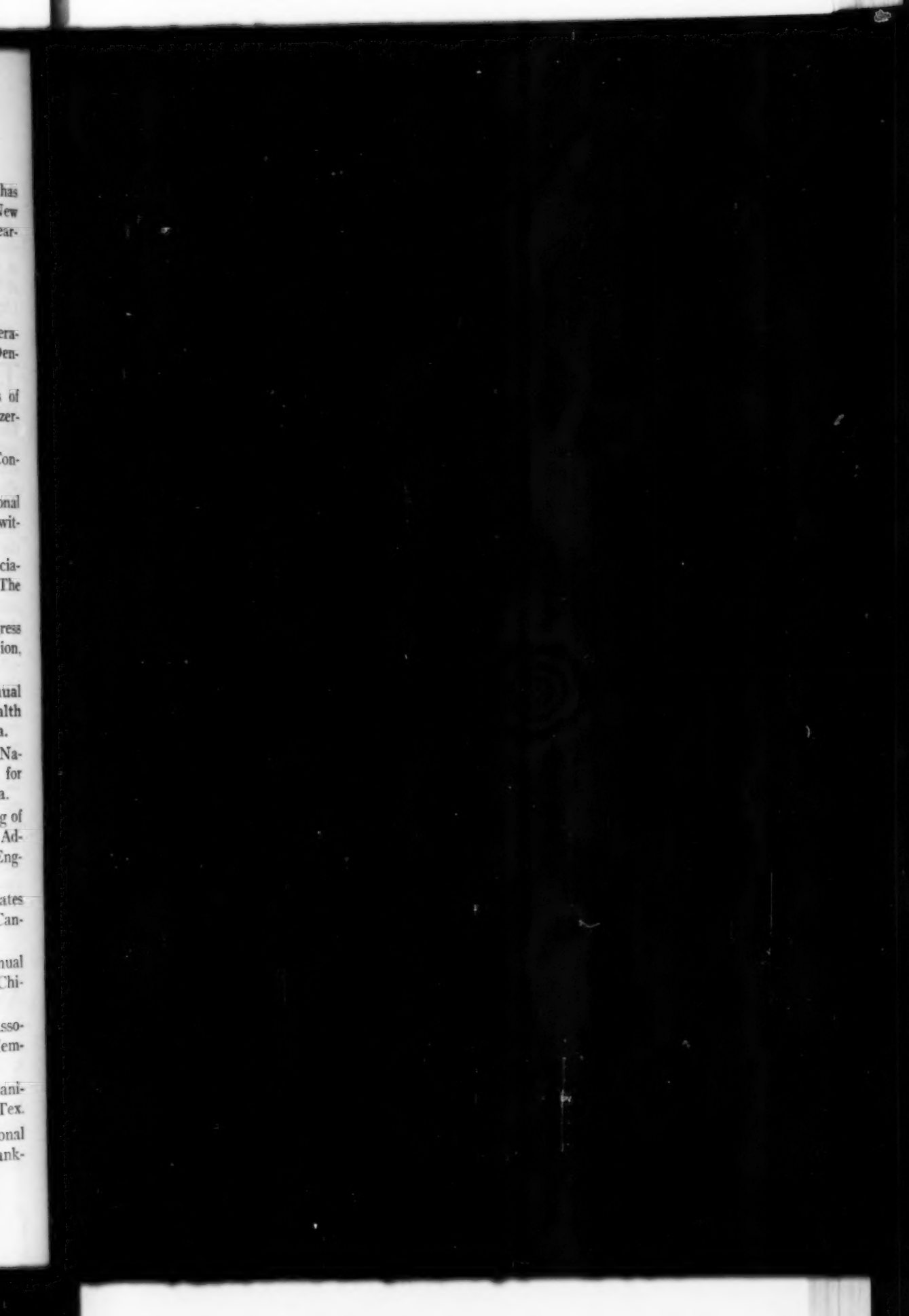
September 20–26, Argentina First National Congress on Social Service for Children, Buenos Aires, Argentina.

September 23–30, Centenary Meeting of the British Association for the Advancement of Science, London, England.

October 5–9, Canada-United States Recreation Congress, Toronto, Canada.

October 12–16, Nineteenth Annual Safety Congress and Exposition, Chicago, Ill.

October 19–23, American Dental Association, Seventy-Third Session, Memphis, Tenn.

November 9–14, the Ninth Texas Sanitarians' Short School, Houston, Tex.

July, 1932, The Second International Conference of Social Work, Frankfurt, Germany.